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ROCHESTER INSTITUTE OF TECHNOLOGY

A Thesis Submitted to the Faculty of
The College of Imaging Arts and Sciences
In Candidacy for the Degree of

MASTER OF FINE ARTS

MYTH UNDERSTANDING

by Chris Jackson

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INTRODUCTION

"Myth Understanding" is a prototype of an interactive educational program geared towards elementary school children. It provides self-paced instruction, mixing animation, graphics, and sound with information pertaining to earth science. Mythological characters from ancient Greece are sources which provide the child with scientific as well as historic information. In effect, children learn about ancient Greek mythology as they discover the mysteries and makeup of the earth.

Children are given the flexibility to decide on what information to view according to their own personal preference. Meticulous attention was given to the artwork, interface design and layout. "Myth Understanding" incorporates multimedia design to make Greek mythology and earth science come alive, exhibiting facts that are not only illustrative, but at the same time entertaining and informative.

The evolution of "Myth Understanding" will be explored in the following chapters. Initial concepts, research, character development and technical considerations will be addressed. My main goal is to stimulate, educate, and entertain children about Greek mythology and earth science. "Myth Understanding" provides them with a passport to the time of myths and magic.

ONE: AN OVERVIEW

"Myth Understanding" is an interactive prototype that combines information on earth science as well as Greek mythology. This prototype is divided into five main sections, three dealing with the elements of the earth – the sky, the sea, and the underground. The fourth section is an animated storybook illustrating the creation myth. The final section controls the sound level, or volume. Each section has been constructed to provide consistent navigation and graphic appearance.

"Myth Understanding" was designed with one purpose in mind – to be used as an educational tool for children in elementary school. Not only does it provide valuable information on Greek mythology and earth science, it can also be utilized as a way for students to enhance their reading and learning skills. This chapter provides an overview of each section of the prototype.

MAIN MENU

After the opening title, the screen dissolves into a panoramic view of Mount Olympus and the surrounding countryside. Pan, the god of the fields, forests, wild animals, flocks, and shepherds, merrily skips out to the cliff on the left edge of the screen. He introduces himself and explains the consequences when the child clicks on him with the cursor. His purpose is to control the volume throughout the entire piece. In Greek mythology, Pan was usually represented as a boy with the legs of a goat and who played his flute for his audience.

After Pan introduces the other cast members, a crack of lightning rings out and Zeus, the god of the skies and the leader of the Olympians, appears next to the palace on top of Mount Olympus. Zeus introduces himself and explains

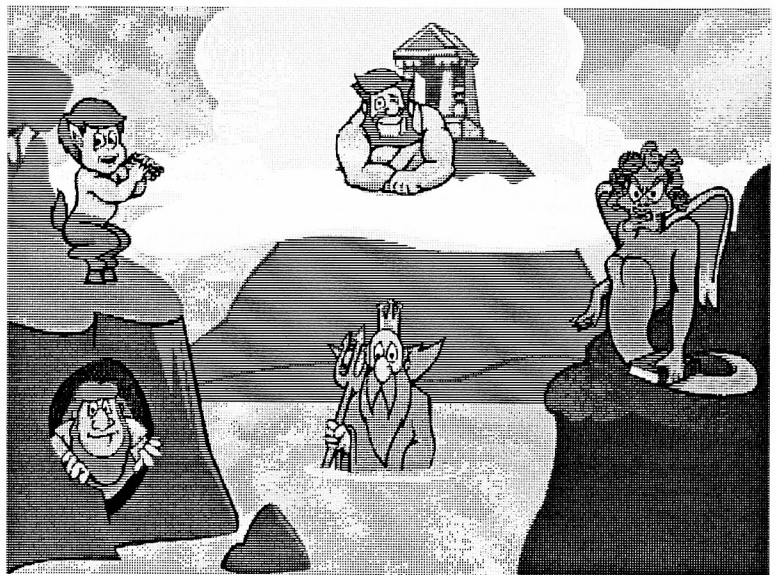
that if the child clicks on him with the cursor, he will talk about the clouds in the sky.

Once Zeus finishes his introduction, the lake below starts bubbling. Poseidon, the god of seas and earthquakes, emerges to introduce himself. He explains that if the user clicks on him, Poseidon will talk about oceans and lakes.

The cave underneath Pan is the entrance to Hades' domain. Hades is the god of the underworld. He sticks his head out shortly after Poseidon finishes talking.

Hades also introduces himself and lets the child know that once clicked upon, he/she will learn about how rocks are formed and what are volcanoes.

Medusa, a monster with snakes for hair, slithers out on the right side of the screen. She carries a book and tells the child that she will read the story of the Greek gods and how they came to be if clicked on with the cursor.



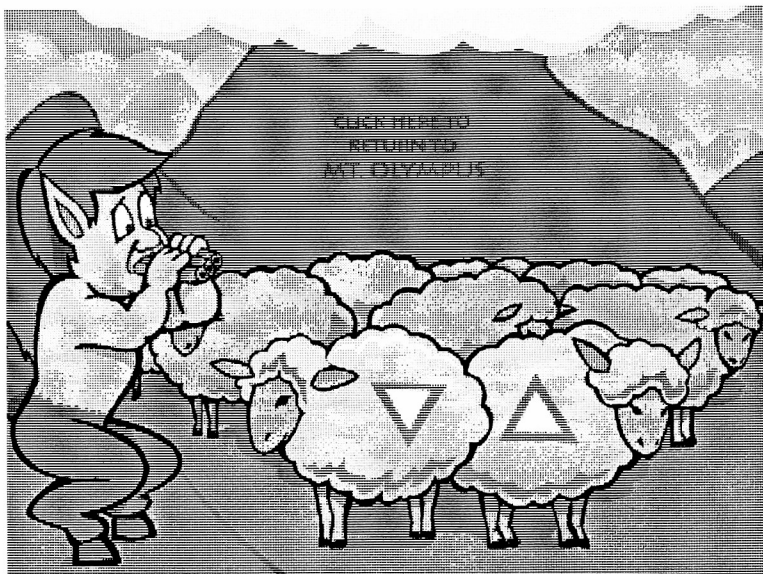
The main menu introduces the main cast of mythological characters in "Myth Understanding." The user can click on any of the characters to learn more about earth science or Greek mythology.

The main menu of "Myth Understanding" serves several purposes. First, it introduces the main mythological characters that will teach the user about earth science or Greek mythology. Secondly, it can be used for navigating between each of the five sections. It also provides the user with the option to quit the program altogether.

PAN

If the child clicks on Pan, he cheerfully plays a few notes on his flute. The screen changes to a close-up of Pan standing on a hill tending a flock of sheep in the background. Pan plays his flute while the two sheep in front instruct the user

on how to control the volume. These two sheep have arrows shaved into their wool skin. If the child clicks on the arrow pointing up, the sound level will rise. If the child clicks on the arrow pointing down, the sound level will decrease. To get back to the main menu, the user needs to click on Mt. Olympus which is clearly labeled, "Click Here to Return to Mt. Olympus."



In Pan's section, the user can control the sound level for "Myth Understanding." By clicking on the arrows on the sheep, the volume will increase or decrease.

THE SKY

If the child clicks on Zeus in the main menu, a thunderbolt cracks and Zeus disappears. The screen changes from the scene at Mount Olympus to Zeus' domain - the heavenly skies. Zeus stands at the left side of the screen and welcomes the user to his domain. To the right, three clouds are labeled each with an earth science topic pertaining to elements in the sky. If the child clicks on one of the clouds, Zeus talks about the topic while the background reinforces what is being explained through animations. The small icon of the palace above Zeus' head takes the user back to the main menu. The cloud below Zeus labeled "Quit" does basically what it says. It allows the user to quit out of the program.

THE SEA

If the child clicks on Poseidon in the main menu, Poseidon submerges into his domain. The screen changes to an underwater scene where Poseidon welcomes the user. Poseidon has three large bubbles to the right of him each labeled with an earth science topic related to oceans and lakes. If a bubble is clicked on, the topic is explained by Poseidon while the illustration animates what is being taught. The small icon above his head serves the same purpose



A rough sketch of Poseidon with his trusty trident, which could split the seas.

as it did with Zeus, to return the user to the main menu. If the child wants to quit the program entirely, he/she needs to click on the clam shell sitting on the rocky shelf below Poseidon. As the cursor rolls over the closed clam shell, the shell opens up revealing the word "Quit."

THE EARTH

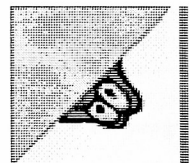
If the child clicks on Hades in the main menu, he/she is transported into the bowels of the earth. Once there, Hades welcomes the user and explains that if they click on one of the boulders on the right side of the screen, they will learn about rocks and volcanoes. The icon above his head returns the user to the main menu. The small hole below Hades reveals the way to quit the program.



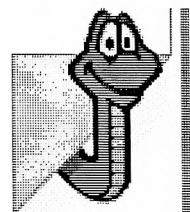
A final sketch of Hades in his domain. I decided that Hades would have a southern accent since he was the furthest south of the three gods.

THE MYTH

If Medusa is clicked on in the main menu, she will tell the story of the Greek gods and how they came to be. This section contains an animated storybook consisting of fourteen pages. After Medusa welcomes the user, she opens her book to page one and begins narrating the myth. The illustrations in the center of the screen animate in conjunction to Medusa's narration. The small icon of Medusa in the upper left corner of the screen allows the user to rewind that page to the beginning to hear Medusa's narration again.



To navigate through the creation myth, the user can flip through the pages by clicking on the snakes in the lower two corners of the screen. The snake on the right allows the user to go forward while the snake on the left allows the child to go back and reread previous pages. As the cursor rolls over them, each snake pops out from underneath the current page and sticks its forked tongue out in the direction it will lead throughout the storybook.

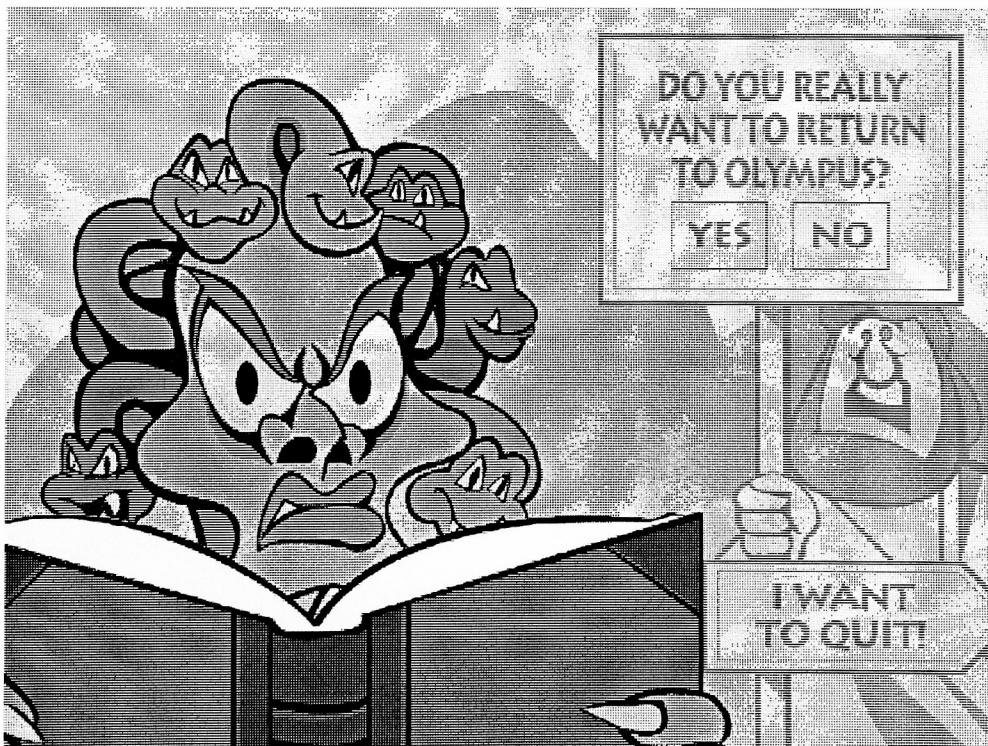


Snake icons which animate and allow the user to flip through the pages in Medusa's storybook

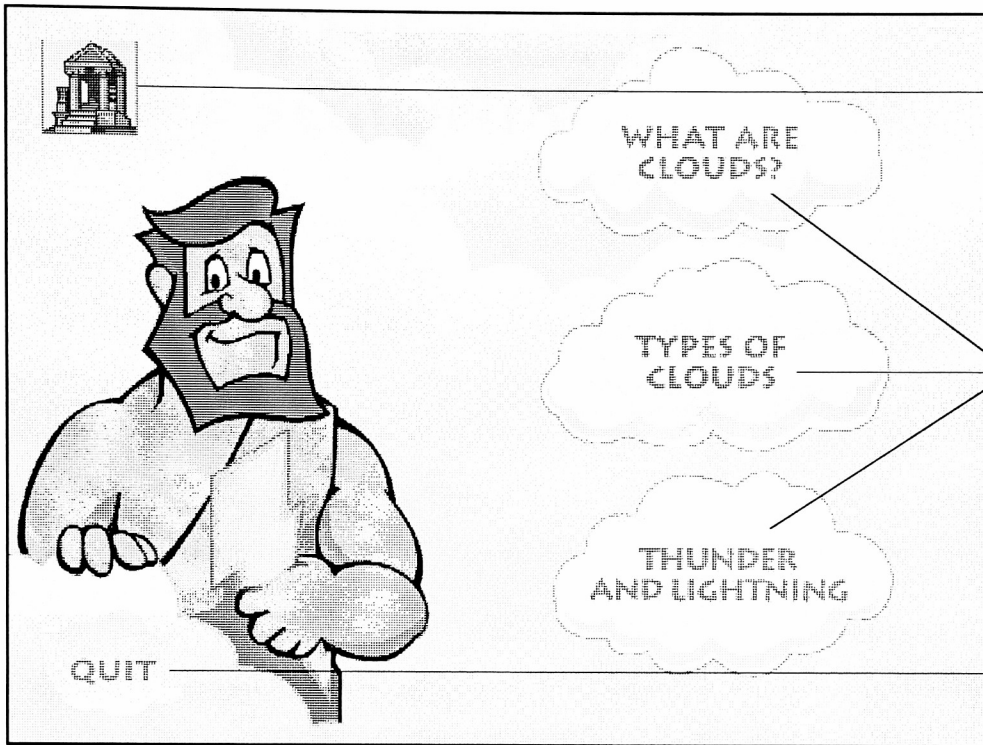
Between the two snakes at the bottom is the page number. It indicates to the user what page they are on in relation to the fourteen pages. It also serves

another purpose. As the cursor rolls over it, the page number information changes to read "Return to Olympus." When this is clicked on, a new screen appears with Medusa holding the open book. In the background stands one of her victims turned to stone holding a sign asking the viewer if he/she really wants to return to Mt. Olympus (main menu). If the child clicks "No," they will return to where they left off in the creation myth. If "Yes" is clicked, the main menu appears. The user also has the option to quit the program entirely by clicking on the "Quit" sign.

Another way to return to the main menu is simply reading all fourteen pages of the animated storybook. If the child clicks on the snake in the lower right corner of the screen on the fourteenth page, Medusa will close up her book and thank the child for allowing her to read the story of the Greek gods and how they came to be. She will also prompt the child to check out the three earth science sections. After that, the user is returned to the main menu having completed a full cycle.



Medusa asks the user if they really want to leave her section. At this screen, the user has the choice to go back to the main menu, the storybook, or quit the program.

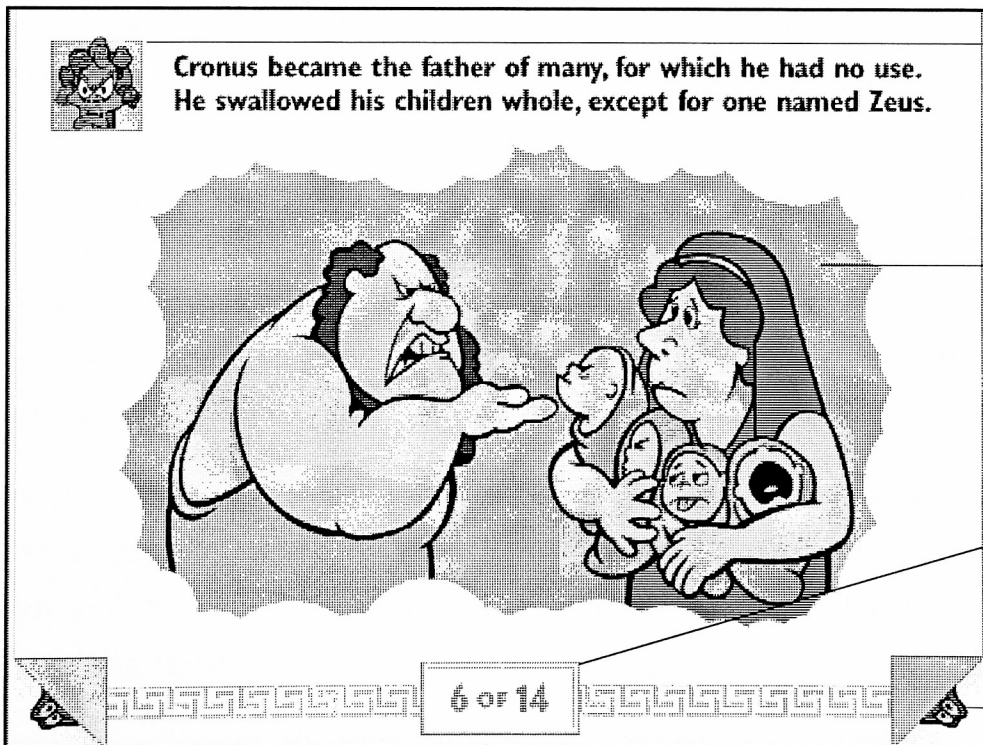


This icon returns to the main menu if clicked on.

These three clouds contain the earth science topics related to Zeus' domain. Zeus narrates each section while the background animates what is being said.

This icon will quit the program if clicked on.

SCREEN FROM ZEUS' DOMAIN



This icon will rewind to the beginning of the page to hear Medusa's narration.

The illustrations animate to reinforce Medusa's narration.

The page number indicates where the user is in relation to the 14 pages in the storybook.

This icon will allow the user to flip through the myth.

SCREEN FROM MEDUSA'S STORYBOOK

TWO: THE CONCEPT IN THE BEGINNING...

I have always been fascinated by myths, legends, and folklore. As a child, I was captivated by the myths from ancient Greece. They seemed to combine all the elements of a good novel, or a great movie – fearless heroes, fabulous creatures, and damsels in distress. I wanted to bring my love of Greek mythology to life in an interactive piece which would educate as well as entertain.

My initial concept for "Myth Understanding" was to animate several popular Greek myths. I enjoy cartooning, and thought there was a lot of great possibilities with Greek mythological characters. I wanted to create an animated comic book where the user could choose what myth to explore and learn why the Greeks created such myths in the first place.

The Greeks created their myths to explain things they could not understand. The story of Pandora unleashing swarms of horrid creatures from a locked golden casket, was told to explain why there is sickness and sorrow and why there is always hope that the world will become a better place to live. In most cases, Greek myths were fantastic stories, where immortal gods and goddesses aided mortals in battling monstrosities of all kinds. I narrowed the myths down to five of my favorites to illustrate and animate.

The first myth which came to mind was Perseus. Perseus cut off the head of the Gorgon, Medusa, who had snakes for hair and could turn men to stone with just one glance. Perseus also rescued the beautiful maiden, Andromeda, from a sea monster.

Second was Theseus, who killed the Minotaur – a creature with the body of a man and the head of a bull. The Minotaur devoured seven Greek youths and

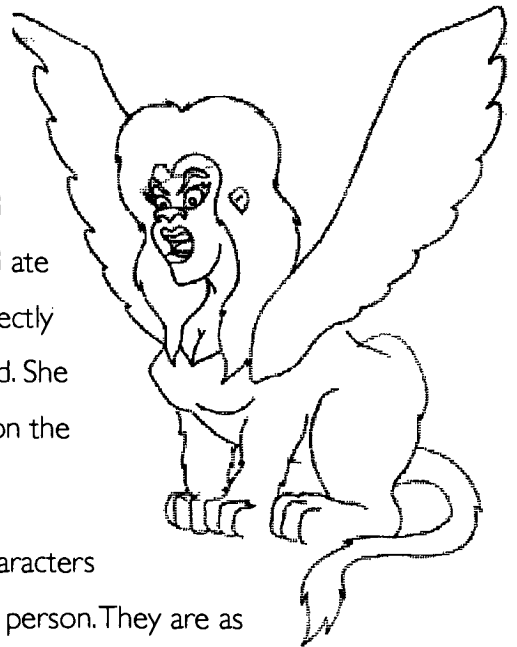


The final sketch for Medusa which got the ball rolling for all the other mythological characters.

seven Greek maidens each year. After killing the monster, Theseus escaped from its lair – a great labyrinth.

Next was Icarus, who while wearing wings, disobeyed his father, Daedalus, and flew too close to the sun. The wax on the wings melted and Icarus plunged to the sea – lost forever. Another myth involving wings was the story of Pegasus and Bellerophon. With the help of the gods of Olympus, Bellerophon captured Pegasus, a winged horse. Together Bellerophon and Pegasus performed heroic deeds and battled terrifying monsters. But Bellerophon was outdone by his own ego. Thinking he now belonged with the Gods, Bellerophon tried to fly Pegasus up to Mt. Olympus. He was thrown off and fell crashing to the ground below while Pegasus returned to his home with the gods.

The last myth I wanted to animate was the story of Oedipus outwitting the dreaded Sphinx. The Sphinx was a monster with the head of a woman, the body of a lion, and the wings of an eagle. She sat perched upon a high cliff and ate all passersby who could not solve her riddle. Oedipus correctly answered the riddle causing the Sphinx to become enraged. She threw herself from her perch and was smashed to pieces on the rocks below.



An early concept for the Sphinx – never used.

The myths from ancient Greece often centered around characters larger than life – stronger, braver, mightier than the average person. They are as entertaining today as they probably were to those in ancient Greece hearing them for the first time. Although the stories may seem fantastic in nature, they hold many redeeming qualities – even today.

The myths expose the listeners to universal concepts of their environment. They learn what is beautiful versus what is ugly, what is accepted versus what is evil. They educate children about the consequences of greed, bravery, grief, and happiness. They are building blocks for learning what is right versus what is

wrong. To create animated myths which embodied these concepts for children was what appealed to me.

With this beginning, I quickly began researching the computer software industry to see if there was anything similar being produced and marketed. First, I went to several of the large chain computer stores, *CompUSA*, *Computer City*, etc. I walked up and down the aisle which sold the educational CD-ROM's looking for any product that remotely resembled my ideas. I bought several software magazines (*CD-ROM Today*, *Electronic Entertainment*, etc.). I checked the internet to find if any web sites offered an interactive, educational version of Greek myths.

To my relief, the closest thing I could find was a role-playing game called "The Wrath of the Gods." It wasn't even close to what I wanted to do. I also began noticing another topic which wasn't being covered extensively – earth science. That is when the light bulb went on over my head.

Many Greek myths are nature myths. They explain such things as what holds up the earth, why the seasons change, and how different groups of stars came to be in the sky. It seemed reasonable enough to combine the two topics into one piece. Characters from ancient Greek mythology could act as teachers about topics related to earth science.

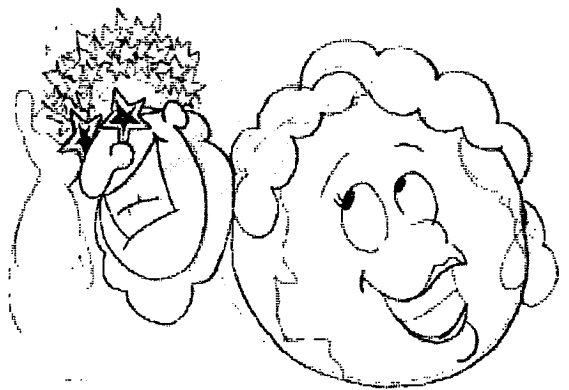
Normally, one would not think of a direct correlation between earth science and Greek mythology. Greek mythology is often associated with the Greek religion. Upon a closer scrutiny, I saw many ways to tie the two together and thought it would be a greater challenge to attempt to teach two topics simultaneously rather than just animating several Greek myths. That is how "Myth Understanding" began to fall into place.

THREE : THE RESEARCH

After changing my initial concept of animating five Greek myths to combining Greek myths with earth science, the next step was to do extensive research to find appropriate ways to link the two different topics. I decided to break the project up into four main sections.

I felt it was necessary to have an overall introduction to Greek mythology. The best way to start is always at the beginning, so I decided to animate their “creation” myth. This would provide the viewer with an understanding of how the Greek gods came to be and how the earth was divided into three territories for them to rule over.

The Greeks made their gods in their own image. Until then, other cultures believed their gods had no resemblance to reality. Their gods were merely anthropomorphic entities which resided in the heavens above. Another distinguishing fact which separates Greek myths from other cultures is that the Greeks did not believe the gods created the universe. It was the universe which created their gods.



A rough sketch of Gaea and Uranus.

THE CREATION MYTH

The Greeks believed that at the beginning of time, the universe was a vast and violent ocean of darkness. They called it Chaos. From out of the depths of darkness, Gaea appeared – what we affectionately call today, Mother Earth. Gaea gave birth to Uranus, our starry sky. It was Uranus who rained down on Gaea spawning the first of the Greek gods, the Titans.

The Titans were made up of six girls (Themis, Rhea, Thetys, Mnemosyne, Theia, Phoebe) and six boys (Oceanus, Hyperion, Coeus, Crius, Iapetus and Cronus). The Titans were as strong as they were beautiful which was fortunate for them. The children which came after the Titans were horribly mutated. The Cyclops were strong giants, but had only one eye. The Hecatoncheries were beasts of a hundred arms and fifty heads.

Uranus was so ashamed and embarrassed by the physical appearances of these children, that he cast them into the bowels of the earth, never to be seen again. Gaea became furious and encouraged Cronus to overthrow Uranus and become lord of the universe. Although Cronus banished his father, he wasn't much of an improvement.

Fearful that his offspring would banish him, Cronus devoured all of his children. Rhea, his wife as well as sister, managed to hide one child, Zeus. Once a man, Zeus dethroned his father and seized power for himself. However, unlike his father, Zeus shared his power with his brothers, Hades and Poseidon.

The earth was separated into three domains and each brother would have ownership of the sky, the sea, or the underworld. One by one, the brothers rolled dice made of anklebones of sheep. Hades won the underworld. Poseidon won the sea. Zeus won the sky and became the leader of twelve Olympians on Mount Olympus.

This creation myth sets the stage for intertwining earth science and Greek mythology. The three Greek gods (Zeus, Poseidon, and Hades) are now the instructors for learning about earth science topics related to their personal domain. Zeus should teach earth science topics related to the sky. Poseidon could explain about our oceans and Hades could illustrate the makeup of our earth.

I found Edith Hamilton's "Mythology" to be the best resource on the subject of ancient Greek myths. I used it as my dictionary. "The Gods and Goddesses of



The final illustration of Cronus – Cronus was actually modeled after one of my noisy neighbors.



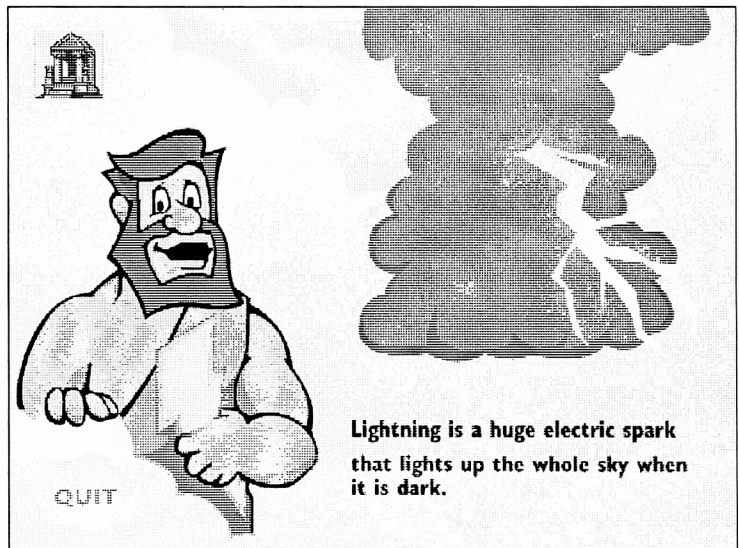
An early concept of baby Zeus – I wanted to animate his hair to look like the filaments in a light bulb. This drawing was never used.

Olympus” by Aliki and “Greek Myths” by Marcia Williams were both children’s books which aided and inspired me to write all of my own text. The more I researched Greek myths, the more fascinated I became with how imaginative they were in devising stories which not only entertained, but incorporated much of their culture and philosophies about life.

Feeling I had a respectable grasp on the Greek mythology aspect of the project, I began thinking about the earth science part. I researched topics which had interested me as child and still do today. I figured that most children who are accustomed to cartoons and non-stop bombardments of action would enjoy learning about volcanoes, earthquakes, thunder and lightning. This was my goal for each of the three earth science sections – to incorporate thrilling animations and information based on what would hold the students’ interests.

THE SKY

The earth science section dealing with the sky and Zeus would discuss topics related to clouds and atmospheric disturbances such as thunder and lightning. The following is an outline of the subject matter I planned to discuss in this section:



A. What are clouds made of?

Clouds form when the sun evaporates water from oceans, rivers, and lakes. As the vapor rises and become cooler, it changes into tiny droplets of water. These droplets of water are attracted to specks of dust in the air. Clouds are millions of these droplets gathered in a big mass.

This is a screen from Zeus’ domain discussing thunder and lightning.

B. What are the different types of clouds?

1. Cumulus clouds are large white fluffy heaps which indicate that no rain is likely.
2. Cumulonimbus clouds tower 64,000 feet and can produce hail and snow storms.

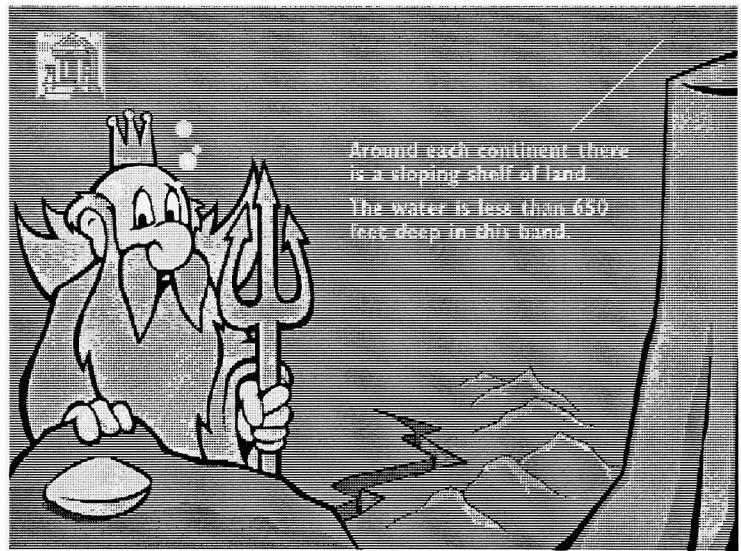
3. Altocumulus clouds are small gray clouds jumbled together.
4. Cirrostratus are high and hazy clouds which indicate rain or snow coming.
5. Cirrus clouds are thin and wispy clouds which form above 32,000 feet.
6. Altostratus are wide clouds which bring rain and snow.
7. Cirrocumulus are high ice clouds which indicate that it is going to get cold.
8. Stratocumulus are lumpy sheets of clouds which can produce light rain.
9. Stratus clouds are low fog-like clouds.
10. Nimbostratus clouds form as a smooth layer which can cover the entire sky.

C. What is thunder and lightning?

Lightning is basically a huge electric spark. Thunder occurs when the air is heated by the flash of lightning which causes the air to expand rapidly making the noise called thunder. Thunder and lightning occur at the same time, but lightning reaches our eyes faster because the speed of light travels about 186,000 miles per second, while sound travels approximately 1/5 of a mile a second.

THE SEA

Poseidon's domain is the sea. He naturally should talk about topics related to water such as oceans, rivers, and lakes. The following outline shows the topics I planned to have Poseidon talk about:



This is a screen from Poseidon's domain discussing what makes up our oceans.

A. How are lakes made?

Lakes were formed by glaciers which cut a deep valley out of the earth. It pushes rocks ahead to form a sort of dam. When the glacier melted the water filled the valley up creating a lake.

B. What makes up our oceans?

Around each continent there is a sloping shelf of land where the water is less than 650 feet deep. Beyond the shelf, the ocean floor drops away steeply and is called the Continental Slope. There is an undersea mountain range called the Mid-Atlantic Ridge which runs through the Atlantic Ocean.

C. What causes ocean waves?

Waves are caused mainly by winds and the pull of the sun and the moon. Giant waves called Tsunamis are caused by undersea earthquakes.

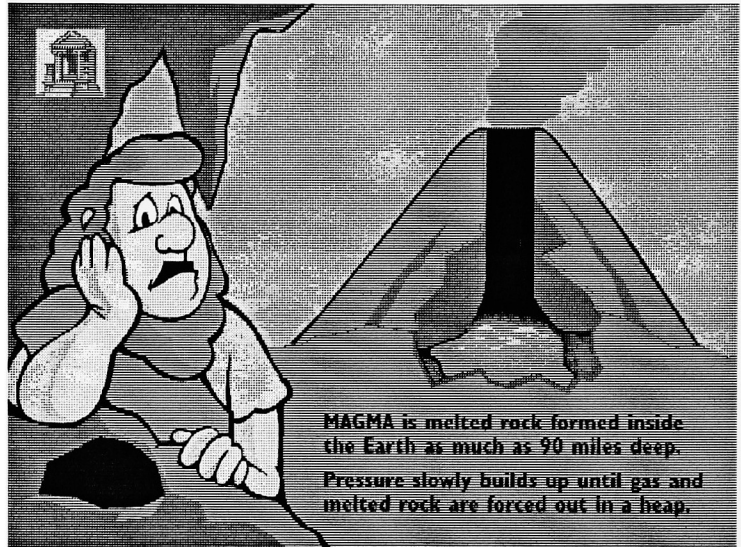
THE EARTH

Hades was the ruler of the under-world; he would be the perfect candidate to talk about the layers which makeup the earth, plus provide insight on the types of rocks. Here is Hades lesson plan:

A. What is inside the Earth?

The Earth is made up of rock and has four main layers.

1. The crust varies from 4 to 25 miles thick.
2. The mantle is approximately 1,800 miles thick which contains some melted rock.
3. The outer core is approximately 1,380 miles thick and about 9000°F liquid rock.
4. The inner core is approximately 780 miles thick but is solid from all the weight of the rocks on top.



MAGMA is melted rock formed inside the Earth as much as 90 miles deep. Pressure slowly builds up until gas and melted rock are forced out in a heap.

This is a screen from Hades' domain discussing what is a volcano.

B. How are rocks formed?

There are three kinds of rock.

1. Igneous is fiery rock. It was once a liquid which cooled and hardened on or below the Earth's surface.
2. Sedimentary rock is made up of tiny grains of rock squashed together.
3. Metamorphic is changed rock made deep underground.
Marble is an example.

C. What is a volcano?

A volcano is an opening in the Earth's crust caused when the crust is stretched or squeezed. Magma is the melted rock which forms as deep as 90 miles inside the Earth. As pressure slowly builds up, the gas and melted rock are forced up the volcano and explodes through the opening.

Many volcanoes form cone-shaped mountains. They can be active, dormant, or extinct.

I used several earth science books to help me narrow down the information I wanted to present in "Myth Understanding." I started researching using children's books. I wanted to see how the author broke down the material in order for a child to understand it. "Tell Me About the Earth, Sea, & Sky" by Tom Stacy and "The Golden Book of Volcanoes, Earthquakes, and Powerful Storms" by Laurence Pringle provided me with an overall outline of information I wanted to present.

After I had a general outline, I began researching each earth science topic separately. For Poseidon's domain, I used "The Oceans" by David Lambert and "Mysterious Undersea World" by Jan Cook. These two books seemed to provide me with all the information I needed concerning the sea. "Weather Forecasting" by Gail Gibbons and "Rain & Hail" by Franklin M. Branley provided me with adequate information for Zeus' domain. For Hades' domain I used "Volcanoes" again by Franklin M. Branley, "Caves" by Genny Wood and "The Story of Rocks" by Dorothy Shuttlesworth. Once I had a solid grasp on all the material I wanted to illustrate in "Myth Understanding," the next logical step was to start drawing and assembling the pieces.

FOUR : PRODUCTION

In developing "Myth Understanding," my first concern was character development. I wanted to create unique mythological characters that were appealing yet didn't scare or offend anyone. My original idea was to create all the characters using cut paper. Using simple shapes cut out of colored paper, I could assemble the characters and mount them on illustration board to be scanned into Adobe Photoshop on a Macintosh computer. However, as I became more involved with the project, I realized my time constraint. It would not be possible to use cut paper because it would take too long to assemble all the pieces. I opted for drawing each character individually and then scanned the drawings into Adobe Photoshop where they were colorized and shaded.

Each character had to evoke a certain personality. At first, I tried a realistic approach. After a few sketches, I decided that was the wrong approach. The sketches didn't seem that they would be appealing to children. Kids today practically live in front of the television watching cartoons. Since my intended audience was children, I needed to catch their attention. I decided to create characters which had a cartoon quality to them. I started with Medusa. She was my favorite character from Greek mythology. I always envisioned her as an old hag who was always having a bad hair day. I sketched her face with huge cheekbones and a sharp, angular nose. Once I had a sketch I liked, the other characters sort of fell into place.

I began each character with quick thumbnail sketches using drawing pencils and a sketch pad. I kept the faces fairly simple in terms of shapes. I would also try to create several different poses for each character so that I wasn't repeating the same image over and over again in the finished piece. Once I had the



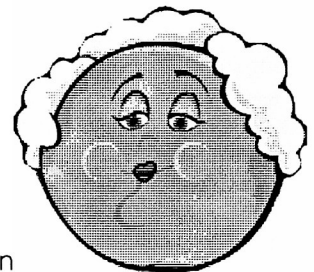
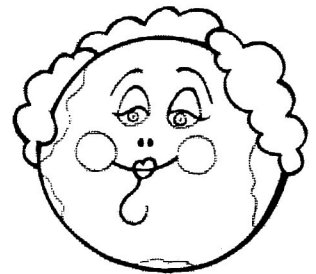
The final concept for Pan – this was scanned into Adobe Photoshop and colorized.

character looking the way I envisioned, I traced the image onto a high quality paper stock using a black felt tip marker and a "Sharpie" marker for areas which required heavy amounts of black. These became the main cell drawings for the animations that followed later. The next step was scanning each character into the computer.

I scanned each image into Adobe Photoshop, a high-end commercial program geared towards manipulating scanned images. It can also be used as a sophisticated paint program. Each piece of artwork was scanned as a grayscale image at 100% and at 150 lpi (lines per inch). Once in Adobe Photoshop, I scaled the image down to fit in an area that was 640 x 480 pixels. This area represented the stage size I was going to use in Macromedia Director, the program in which "Myth Understanding" was created.

After I scaled each image to fit into the appropriate stage size, I used the magic wand tool in Adobe Photoshop to select certain areas of the drawings to fill with color. I chose to use the System Palette as the source for all my colors. It consists of 256 colors which turned out to be more than adequate for coloring my illustrations. After the appropriate colors were applied, I choose image size from the "Image" menu in Photoshop. In the image size dialog box, I set the resolution of the image from 150 lpi to 72 lpi. Since a computer monitor only displays a resolution of 72 lpi, I didn't need the resolution set any higher. The only reason I scanned the image at a higher resolution was to get better detail while scanning.

The finishing touch for all the illustrations was to go over all the black outlines again to give them a smooth defining edge. When the scanned images were filled with colors, the black lines would sometimes break up. To fix the problem, I used the pen tool in the "Paths" menu to trace around each line. Once the path was completed, I filled it with black. For small areas, I used the paintbrush tool set to the lowest brush size possible. The paintbrush pressure was set to



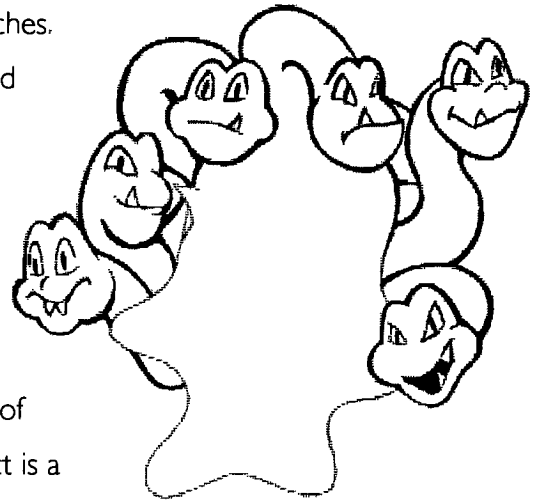
The series of illustrations above show the evolution of Gaea, our fertile Mother Earth. The illustration at the top was sketched in pencil. The middle illustration was a tracing of the top one in marker. This one was scanned into Adobe Photoshop and colorized to produce the bottom illustration which was used.

100% and the color was set to black. By taking the time to clean up the black outlines, the illustrations looked crisp and clean when imported as PICT files and viewed in Macromedia Director:

ANIMATION

To create the animating parts, I used two different approaches.

The complex animations were drawn by hand and scanned in as separate illustrations. After I had a finished drawing (using the markers), I taped it down on top of a light table. Next, I placed a clean sheet of paper on top to create anchor points and keep a consistent size for the next illustration in the animating sequence. I then drew the next cell in the animation sequence. Medusa's hair full of snakes turned out to be the most difficult. The end product is a looping cycle which consists of seven different drawings of her head with the snakes in different positions for each drawing.

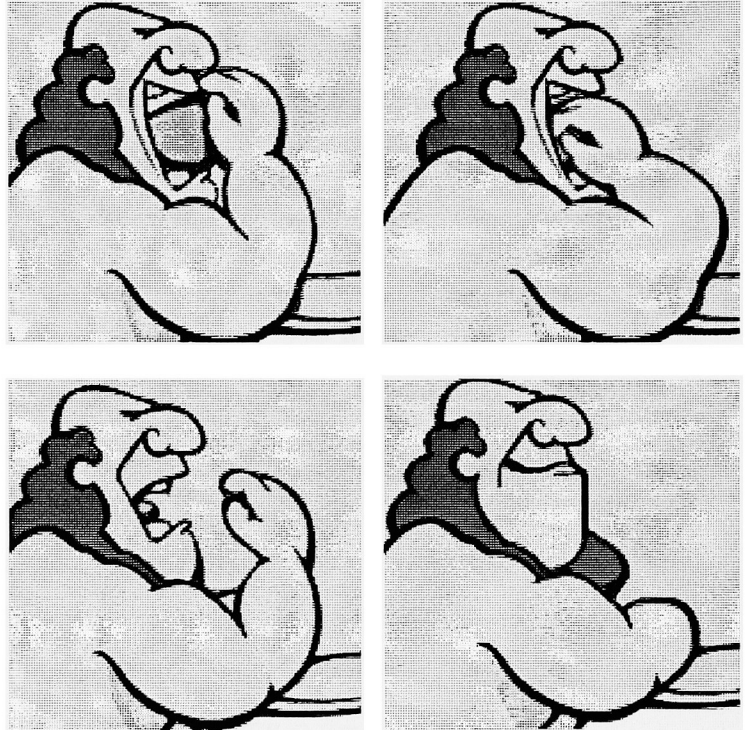


This is one of seven different heads used to animate Medusa's hair full of snakes. I decided it would be easier and faster to paste a final colorized face into each of the seven heads. That way, the face would remain consistent while the snakes slithered around on top.

Another way I created animating parts for "Myth Understanding" was by utilizing some of the functions in Adobe Photoshop. I took a final colorized illustration file and copied it. Next, I created a new file in Adobe Photoshop in which I pasted the copy. The appropriate body parts were then rotated using the "Rotate" command. The number of animating parts varied depending on the animal or body part that was moving.

Once all the files were brought into Macromedia Director as cast members, they were assembled on the stage. Most of the animations in "Myth Understanding" are frame animations. This means that as Director played one frame to the next, the images changed as well. I also utilized some Lingo scripting to enhance certain areas with small animations so that the user had some form of feedback and realized that certain images would perform or inform if clicked on.

To create an animating sequences in Director, I placed the first cell into a frame in the score window making it a sprite. I would select that frame as well as several frames after in the same channel and choose the "In-Between Special" command. This created copies of the sprite in all the selected frames in the same channel. Then, I selected the next illustration cell of the animating sequence in the cast member window as well as selected one of the sprite copies in a frame in the score window. By typing Command-E or selecting "Switch Cast Members" from the Score menu, Director swapped the copied sprite in the score window with the selected cast member. Depending on how many animating parts I had, dictated how many times I would use this animation technique.



This shows the animating parts for Cronus eating. The illustrations were done in Adobe Photoshop. Once imported into Director, each illustration was put frame-after-frame to simulate Cronus eating his child.

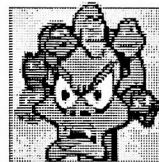
Images that slowly move across the background, such as a cloud, were done using the same "In-Between Special" command in Director. Similar to the first animation technique, I placed a cast member into a frame in the score window making it a sprite. I positioned it on the stage where I wanted the animation to start. Instead of selecting several frames, I copied that one sprite and pasted the copy several frames after the initial sprite. The only thing I had to remember was to paste the copied sprite in the same channel as the first. I moved the position of the copied sprite on the stage to where I thought the animation should end. Holding down the shift key, I selected the first sprite and the second sprite. All the frames in between the two sprites were selected as a result of holding down the shift key. I selected "In-Between Special" from the

score window and depending on how many frames were in between the two sprites, Director interpolated and placed the copied sprites so that there was a smooth transition from the starting sprite to the last sprite as Director played.

Another type of animation technique I used in Director was a "roll-over." When the cursor rolls over of the mythological characters in the main menu, they move or wave at the user. For each of the three earth science sections, when the cursor rolls over the topics on the right side of the screen, the gods move their heads as if they were following what the user is doing. This was accomplished using Lingo commands.

Basically, the roll-over Lingo command tells Director to swap a puppetsprite, which has been set to true, with a determined cast member depending upon the position of the cursor on the stage. When the user wants to flip through the pages of Medusa's animated storybook, the snakes pop their heads out. This is accomplished using the roll-over scripting. Director checks to see where the cursor is in relation to the snakes in the lower corners of the screen. If the cursor isn't there, they do nothing. Once the cursor rolls over the puppetsprite, that sprite is swapped with the determined sprite in the Lingo scripting. The snake illustration switches from one (hiding under the pages) to the other (sticking its head out).

```
on medusa roll
  if rollover (13) then
    set the castnum of sprite 13 to 4
    updatestage
  else
    set the castnum of sprite 13 to 3
    updatestage
  end if
end
```



This shows an example of a "roll-over" script. As the cursor rolls over the top illustration on the stage (sprite 13), it swaps that image with the bottom illustration (castnum 4). The "else" statement is needed if the cursor is not over sprite 13. That keeps it set to the top illustration (castnum 3).

SOUNDS

The sounds were recorded using Macromedia SoundEdit 16. I used the built-in microphone on my monitor (AppleVision 1710AV). After the initial recordings at 16 bits, I amplified each recorded track approximately 200%. From there I toyed around with the "Noise Gate" options as well as applied a reverberation to Medusa's narration. The pitch was adjusted for each character so that they didn't all sound the same.

Once I had the desired effect, I downsampled the recorded sound from 16 bits to 8 bits to reduce the size so that it wouldn't take up much memory. Sound effects, such as thunder or an occasional belch, were recorded off from "Sound Effects" CDs. They again were recorded at 16 bits and later downsampled to 8 bits once the desired sound was achieved. In Director, I placed all the narration in the second sound channel. Sound effects were kept in the first sound channel.

I also used sound effects as puppetsounds. Puppetsounds are used in Lingo scripting to activate the sound when the user clicks the mouse or when the cursor rolls over an active puppetsprite. When the user clicks upon Medusa's icon in the storybook, it rattles when the mouse button is clicked. I purposely did this as another form of feedback for the user. This tells them that they managed to click on the desired object. The snakes at the bottom of the screen also incorporate puppetsounds. When they are clicked on, they hiss before flipping to the next page.

Sound plays an important role in multimedia presentations. It can also become an annoying factor. It is important that the user have control over the volume. It seemed only natural that Pan, with his flute, should be the one to control the sound level in "Myth Understanding." When the user clicks on him in the main menu, a new screen appears providing the way to control the volume. This is handled through Lingo scripting.



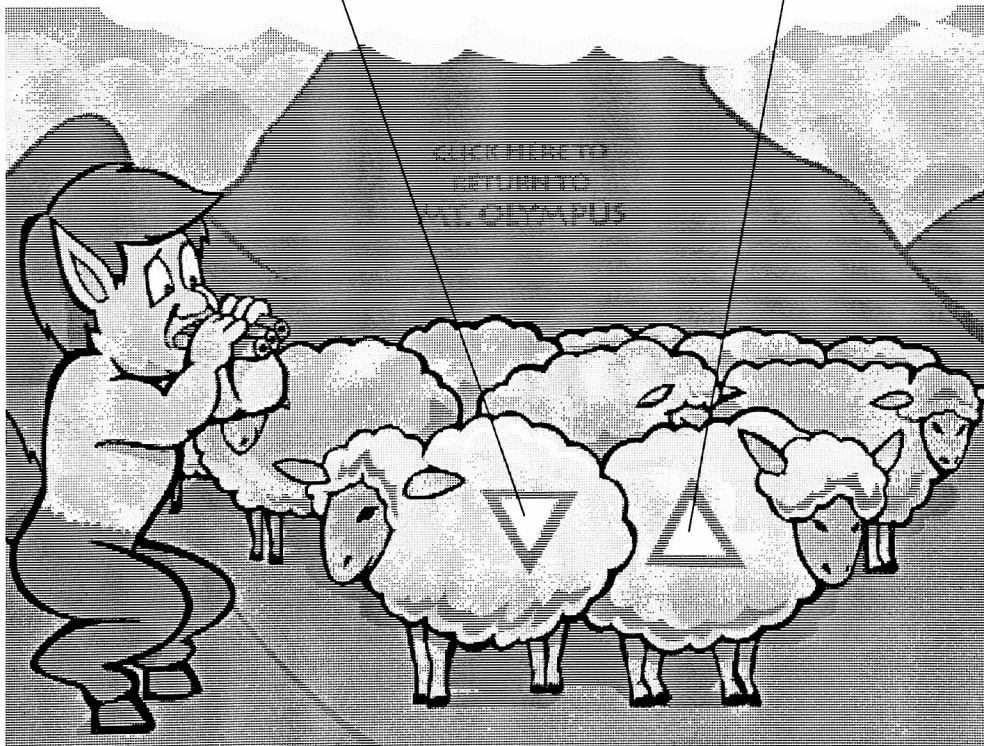
This is an early concept for Zeus – it was never used.

A script was applied to the arrows on each of the two sheep in front. If the user clicks on the arrow pointing up, Director checks to see if the sound level is first set to 7, the highest setting. If the sound level isn't set to 7, it increases whatever setting the sound level is presently at by one. If the sound level is at 7 it leaves it there. Just the opposite happens when the user clicks on the arrow pointing down. Director checks to see if the sound level is set to 0, the lowest setting. If the sound level isn't set to 0, it decreases whatever setting the sound level is presently at by one. If the sound level is at 0 it leaves it there. I also attached a puppetsound of a sheep cry to the script. As the user clicks on one of the arrows, the sheep cries out and its head moves in unison.

Script for controlling the volume in “Myth Understanding”

```
on mouseUp
  if the soundLevel > 0 then
    set the soundLevel to the soundLevel - 1
  end if
end
```

```
on mouseUp
  if the soundLevel < 7 then
    set the soundLevel to the soundLevel + 1
  end if
end
```



Instead of Pan telling the user how to control the volume, I thought it would be more humorous to have the actual sheep speak.

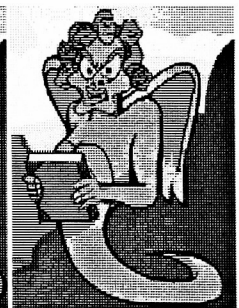
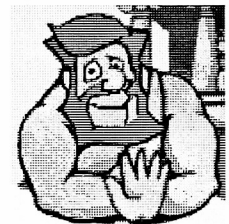
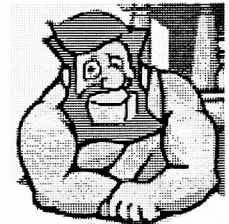
FIVE : TECHNICAL CONSIDERATIONS

In order for "Myth Understanding" to fulfill its purpose and function properly several technical considerations needed to be addressed. These issues included navigation, screen design, file size, and color palettes to maintain a consistent look throughout. Each issue will be discussed with respect to this prototype.

NAVIGATION

Navigation is probably the most crucial element in any multimedia presentation. It is important that the designer provide the user with a clearly defined navigational system to gather the information intended for them. The user is there to navigate around to find what they are searching for. If the navigation is designed poorly, the user probably will get lost. If the proper navigational items are not truly defined, the user may become discouraged and decide not to waste the time or energy looking for the correct link to another movie or finding a way to quit one section to begin another.

As a designer, I didn't want the user to become preoccupied in figuring out how to maneuver around. At the same time, I didn't want to create the standard button metaphor which is used all too often in multimedia design. To get around the buttons, I decided to let the mythological characters make up the navigational system. To reinforce this, I had the characters introduce themselves and tell the user what would happen if they clicked on them. Secondly, I used the roll-over animation technique discussed earlier. The characters move as the cursor rolls over them. This provides the user with instant feedback indicating that something could happen if that object was clicked on.



These illustrations were used as part of the "roll-over" animation technique in the main menu.

SCREEN DESIGN

Navigational systems are closely linked to the screen design of the finished product and often dictate the design. It helps the user if the navigational buttons stay in the same locations throughout different sections. This way, the user won't waste time searching for the "Quit" button. In "Myth Understanding" I kept the navigational buttons fairly consistent in terms of location throughout. In the three sections dealing with earth science, the same basic interface design was applied. The only difference was the artwork. Each section contained a god standing on the left side of the screen. Above each of their heads was the icon of the palace on Mount Olympus. If clicked on, this took the user back to the main menu. Below the gods was a Quit button, either disguised as a cloud, or inside a clam shell. The earth science topics were always on the right side of the screen. Efficient screen design is a major benefit to the user. Once the user has navigated through one section successfully, the easier the following sections will appear.

Screen design also serves several other important purposes. It focuses the user's attention to the information you, as a designer, are trying to communicate. If the screen is cluttered with many items and a lot of text, the user may become confused and again waste time trying to decipher what it is you are truly trying to say. The graphic elements need to be simple and clean. Avoid using lengthy amounts of text. If the user wanted to sit and read everything, he/she might as well buy a book. In "Myth Understanding" I kept the text to a minimum of two sentences. The graphic elements in each section were reduced to a minimum. In areas which did have a lot of elements, I used animation to highlight what I was trying to teach.

Choosing the appropriate typeface and type size is important. It is harder for the user to read text on the screen than from a printed sheet of paper. I chose Gill Sans Condensed Bold and Lithos Black not only because they evoked a feeling of ancient Greek lettering, but they were bold enough and legible

enough for the user to read. The appropriate font should always be chosen based on the subject matter. The type size should also be carefully planned. In my case, I didn't want the text overpowering my graphic elements, only helping in enhancing the screen design.

FILE SIZE

The most annoying thing, to me, about multimedia projects is watching the cursor just sit there as a new movie is being loaded. This can be painfully excruciating if the project is being run off a CD-ROM. On a dual speed CD-ROM drive, the information is being loaded 300k at a time. That is not a lot of information. Animations may run slowly or movies load appallingly slow if the designer doesn't devise a plan to keep the file size for each movie low. Since my target audience was elementary schools, I knew, through visiting the schools in my hometown, that the Macintosh computers they had were not the fastest machines in the world. I knew this going into the project and that helped me in managing my files.

The average movie size in "Myth Understanding" is about 1 MB. Through a series of tests done burning CD-ROMs, I found that a movie below 2 MB, was a fairly acceptable size that didn't hinder load times or animations. To keep the file size down, the first thing I needed was control over my colors.

COLOR PALETTE

An important rule to remember when designing a multimedia piece is the more colors used, the slower the program will function. The images may look cleaner and sharper, but if the user had to choose between imagery or speed, the majority would vote for speed. To maximize the functioning speed of "Myth Understanding" I used 8-bit graphics and the system palette which consists of 256 colors. Not only did this help in keeping my file size down, but the running speed on animations improved. In fact, they seemed to run just as fast off the dual speed CD-ROM as they would running off the Macintosh hard-drive itself.



Another pose for Zeus – this was used in his domain section.

CONSISTENCY

I wanted "Myth Understanding" to have a consistent look and feel of its own. I accomplished this several ways. First, I created and illustrated all of my own characters. By doing this, each character had a similar style which brought about a sense of unity to the piece. Second, using the system color palette not only helped cut down the file sizes, but the colors aided in the consistency of the finished product. Each character used in "Myth Understanding" were brightly colored to appeal to small children.

Another big consideration for maintaining the consistency of "Myth Understanding" was the text. I didn't want to use dry, boring facts. Children as well as adults get bored and may not retain much if the information is bland and long-winded. I decided to keep my text simple. I chose not to use big words which would confuse any child. I kept the amount of text limited to approximately two sentences. To give the whole piece a certain flare, I decided to rhyme all the text. I am a glutton for punishment. Although I struggled with the text for months, the final results were worth the effort. Not only was there a consistent look and feel between sections, I had the satisfaction of knowing that it was all mine. The next step was to test it on my intended audience to get their opinions and recommendations.

SIX : TESTING RESULTS

"Myth Understanding" went through three testing stages. The first test was conducted at Geneva Middle School with a class of six graders. I had student taught art there a couple of years ago and had maintained a good relationship with the art teacher. She had just received a new Macintosh computer for her art classes and thought it would be nice to show students some possibilities of using the computer as an art tool. This began the first test of "Myth Understanding."

My main concern with testing was to see if I had succeeded with a good navigational design. I did not include a "Help" section because I personally hate them. It is much more of a challenge to create a navigational system that speaks for its own without having the user look up directions. I just sat back and watched each student explore around Mt. Olympus. Not one student had a problem or got lost. All the students enjoyed the illustrations and animations. I heard a couple of "Cool"s and "Can we have a copy of this?" That made me feel good. However, I did notice one problem that the students were having which made me rethink a couple of design decisions.

When the students would enter Medusa's storybook, they would not wait for Medusa to finish her narration. They saw the cursor and began clicking around on the screen. This would often interfere with the animation and narration. To fix the problem, I decided to hide the cursor while Medusa narrated each page. Using Lingo scripting, I hid the cursor by typing "cursor 200" in a score script on the first frame of the Director movies. Once Medusa finished speaking, I figured out what frame she ended at and added about ten more frames. At the tenth frame after Medusa's narration, I turned the cursor back on using the

Lingo script, "cursor -I". A few weeks later, I was fortunate enough to test this change on a couple of boys aged 8 and 11.

The second testing was really just a happy accident. I was interviewing for a job position at Kodak. It seemed that my interview coincided with "Bring Your Child to Work Day." While showing my work off a CD-ROM, I asked if I could test out my thesis project on my interviewer's children. He agreed and the second testing of "Myth Understanding" began.

The corrections I made to Medusa's storybook worked. The boys waited patiently while Medusa narrated each page. When she finished, the cursor appeared on the screen, and the boys proceeded to the next pages. Everything seemed to be running well when I noticed another thing which caused me to reevaluate my thesis project. I began noticing the boys clicking on each of the characters in the storybook. They seemed to think they would do something more. This happened on each page.

The more I thought about it, the more I liked the idea of putting hidden information into the storybook. There was already information pertaining to the creation myth being read to them. I thought it might be interesting to have each character on the page talk about what it was like to live in ancient Greece. That way I would be teaching even more than I had initially planned. The user would not only be learning about Greek mythology and earth science, but now, if they began clicking around in the storybook, they would learn about ancient Greece itself. So I went back to the drawing board and wrote a rhyming verse about a Greek custom for every character in the storybook. Did I say I was a glutton for punishment?

In Director, I set up the additional animations in each movie. Now if the user clicked on a character on a page, Director would jump to a predetermined marker within that same movie, where the new information would animate. I also thought it would be a good idea to turn off the cursor while the charac-

ters spoke. Once they had finished, the cursor would reappear and the user had the opportunity to find more hidden facts or move on to another page.

The third and final testing of “Myth Understanding” occurred at the Thesis Opening Reception on May 3, 1996. I received a lot of wonderful comments. The corrections and additions which I made as a result of previous testing worked and even enhanced the project more.

The most encouraging feedback I received that night was from Marianne O’Loughlin’s children. They wouldn’t leave the computer giving other people a chance to sit down and test it. That seemed to indicate to me that I had succeeded in capturing and maintaining my intended audiences’ attention. I guess it would be safe to say that “Myth Understanding” successfully accomplishes all that I intended it to do – to stimulate, educate, and entertain children about Greek mythology and earth science.



This is an early sketch of three Olympic gods – Hades, Poseidon, and Hermes. This art was used in one of my favorite pages in Medusa’s storybook.

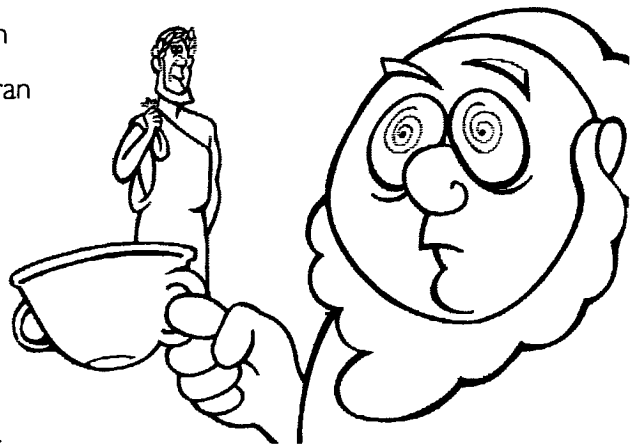
SEVEN : CONCLUSION

"Myth Understanding" is a prototype for an educational program geared towards elementary school. In other words, it is not a finished product. There is a lot more I would like to do with it. Three sections still need to be completed dealing with earth science. Due to time constraints, I managed to get only two topics completed for each of the three domains. I wanted the user to have at least a couple of choices available.

I would have liked to have included games related to each earth science section. I had toyed around with creating a form of concentration-style game for Zeus' domain. I wanted the user to match the different types of cloud forms. Also, I felt this would challenge me in Director's scripting department. Unfortunately, I ran out of time.

For Medusa's storybook, Bob Keough mentioned creating a glossary where students could look up terms and find possible links to other parts of the program. I find that appealing and challenging in terms of navigation. There seems to be endless possibilities and directions in which I can go with "Myth Understanding." But, I think the next step will be finding a perspective publisher to see if I truly have a marketable product.

I feel that the prototype, as it is now, provides enough content and demonstrates the goals I wanted to accomplish. I have enhanced my understanding about good interface design and communication skills. My Director skills have not only improved in scripting, but I now have a respectable grasp on memory



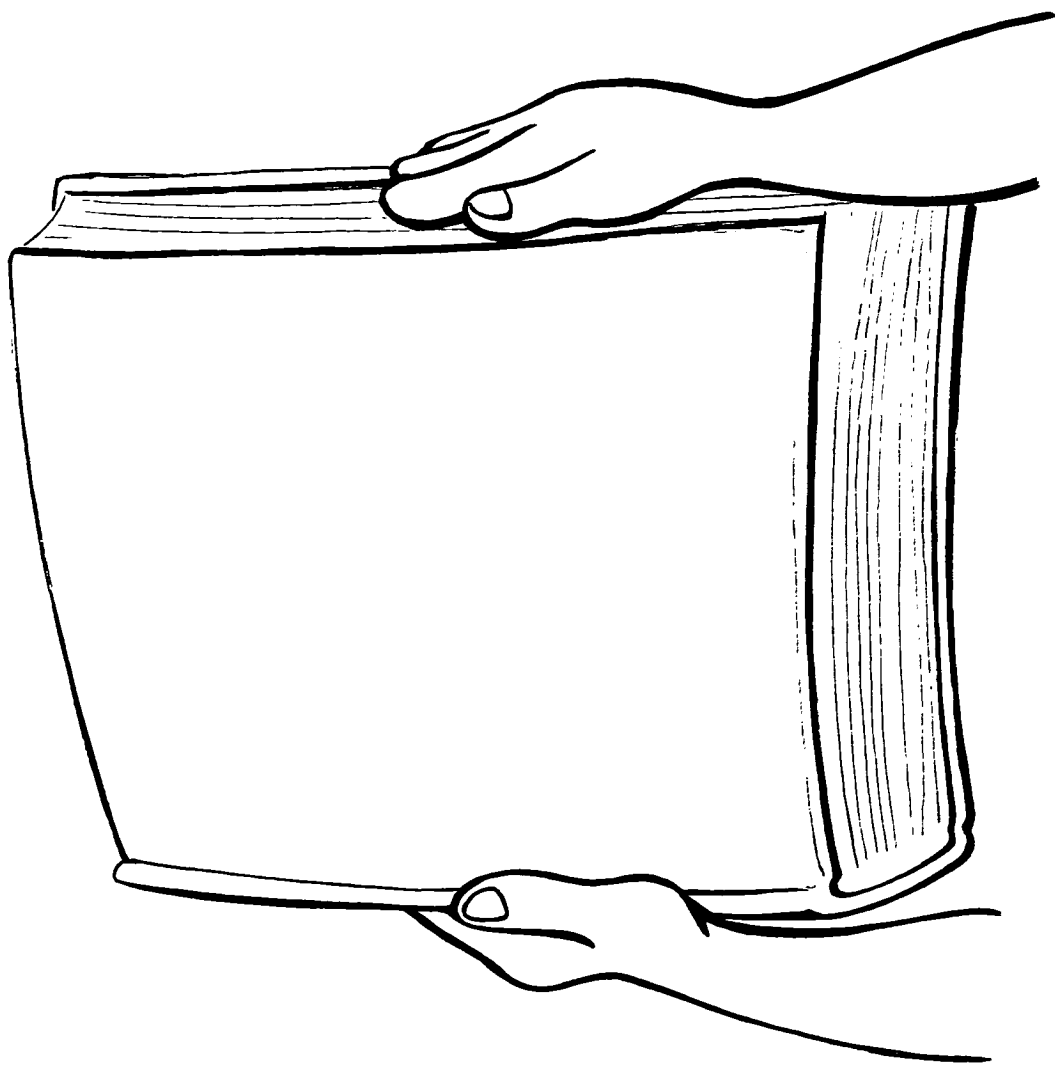
An early sketch of Cronus being drugged by Zeus. The Zeus character was later modified.

management and getting the most out of a Director project without sacrificing quality for speed. The testing was probably the most rewarding. It showed to me that "Myth Understanding" was successful and that kids enjoyed playing it. I feel that I have created something that is unique and may possibly be used as an effective educational tool.

APPENDIX

It has been stated that Walt Disney Studios was the first to use storyboards to map out a rough draft before beginning the task of animating a feature presentation. Studio artists created thousands of sketches to establish a consistent look and a well-structured storyline. Being a Walt Disney fan, I decided to draw a rough storyboard for the creation myth in "Myth Understanding." The following pages are copies from the initial storyboard. Some of the illustrations remained intact in the finished prototype. Others were used as a jumping off point and were further embellished as the thesis project progressed.

Also included in this appendix is the entire text used in "Myth Understanding." This was the hardest part of the whole project. I wanted this project to be completely mine. I didn't want the text to feel like a term paper on Greek Mythology and earth science. Since my target audience is elementary school students, the text had to be entertaining as well as informative.



IT'S ALL GREEK TO ME - BOOK
NEED TO ANIMATE (OPENUP)

AND HOLD HANDS!

BACKGROUND BLACK

LONG AGO BEFORE THE GODS EVER CAME TO BE,
THERE WAS ONLY CHAOS. - TOTAL DARKNESS, THAT NO ONE COULD SEE.

FOR THE GIFT
FOR THE GIFT
FOR THE GIFT
FOR THE GIFT

BACKGROUND BLACK

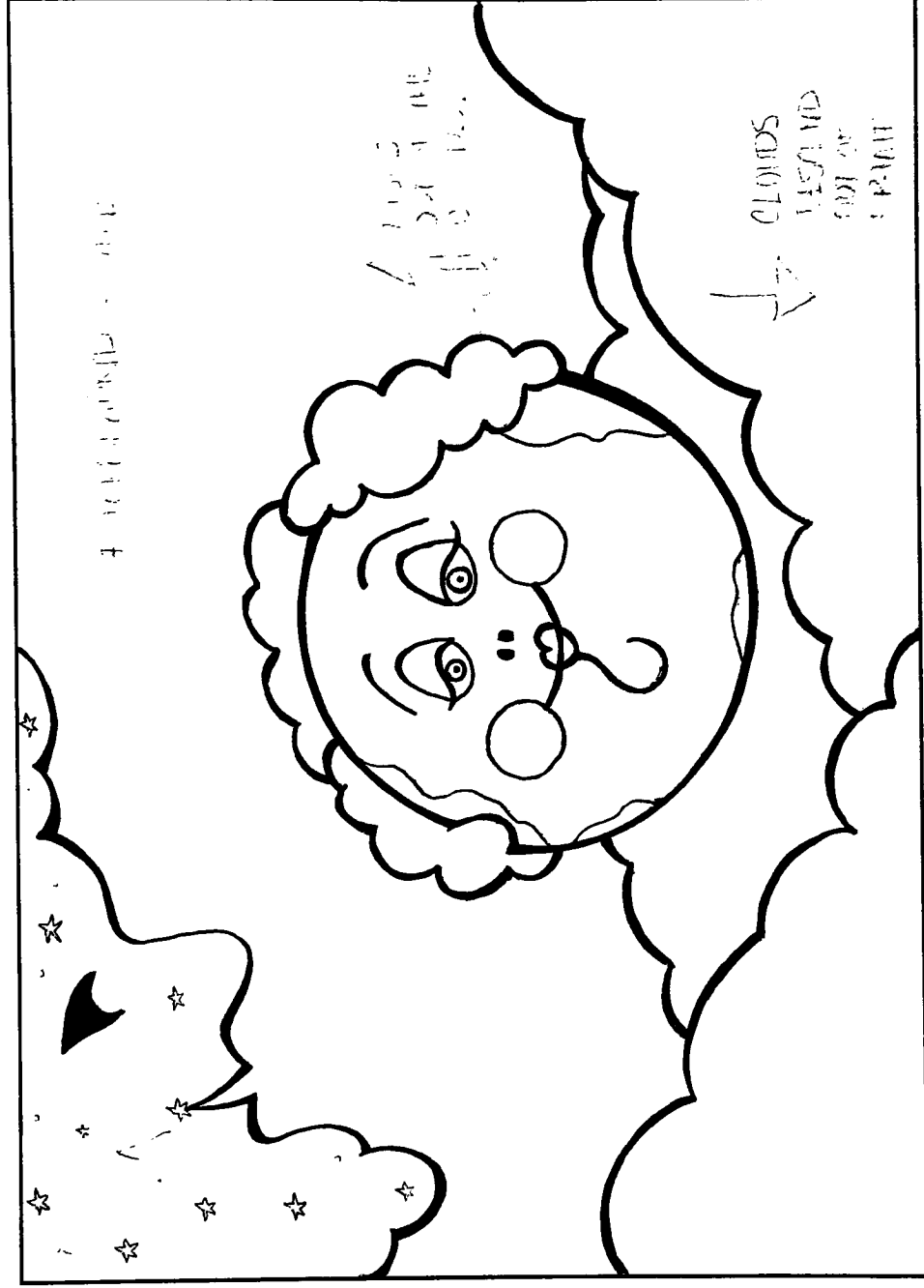


WAS THE UP
AS THE UP
WAS THE UP

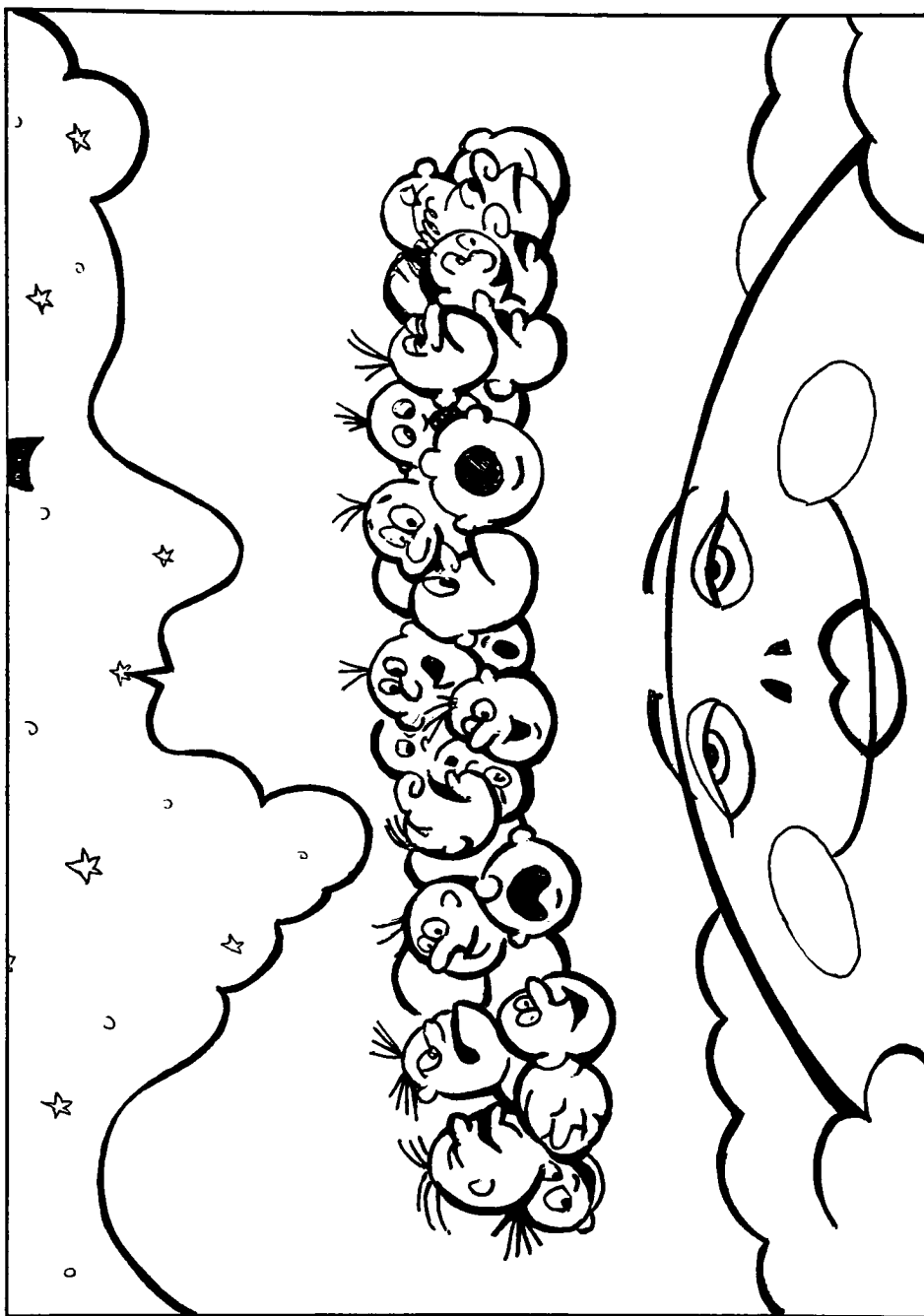


HIS CHILD WAS NIGHT WHO DESPITE ALL THE ODDS,
MADE OLYMPUS WITH CHAOS - THE SKY KINGDOM OF THE GODS.

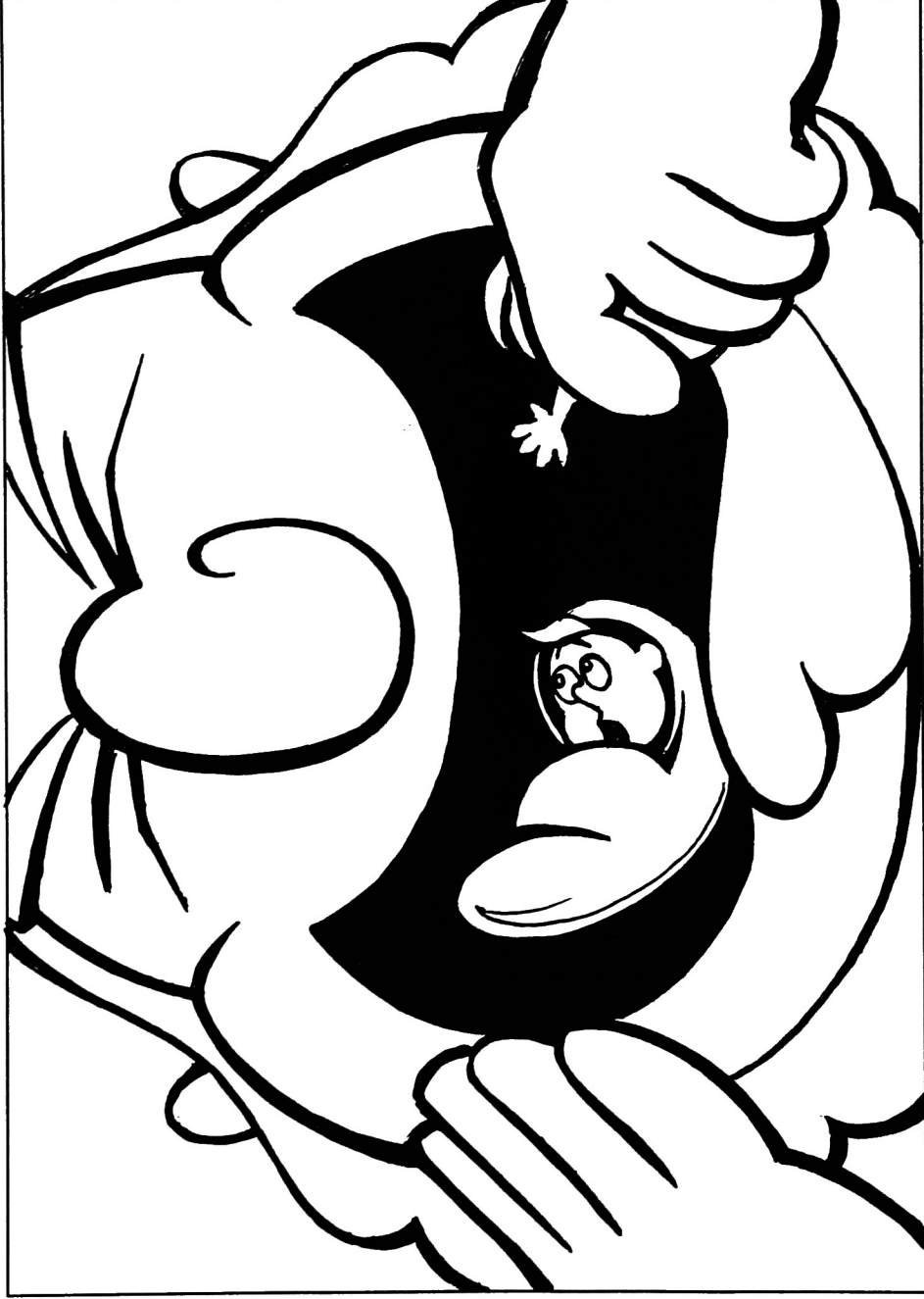
GAIA



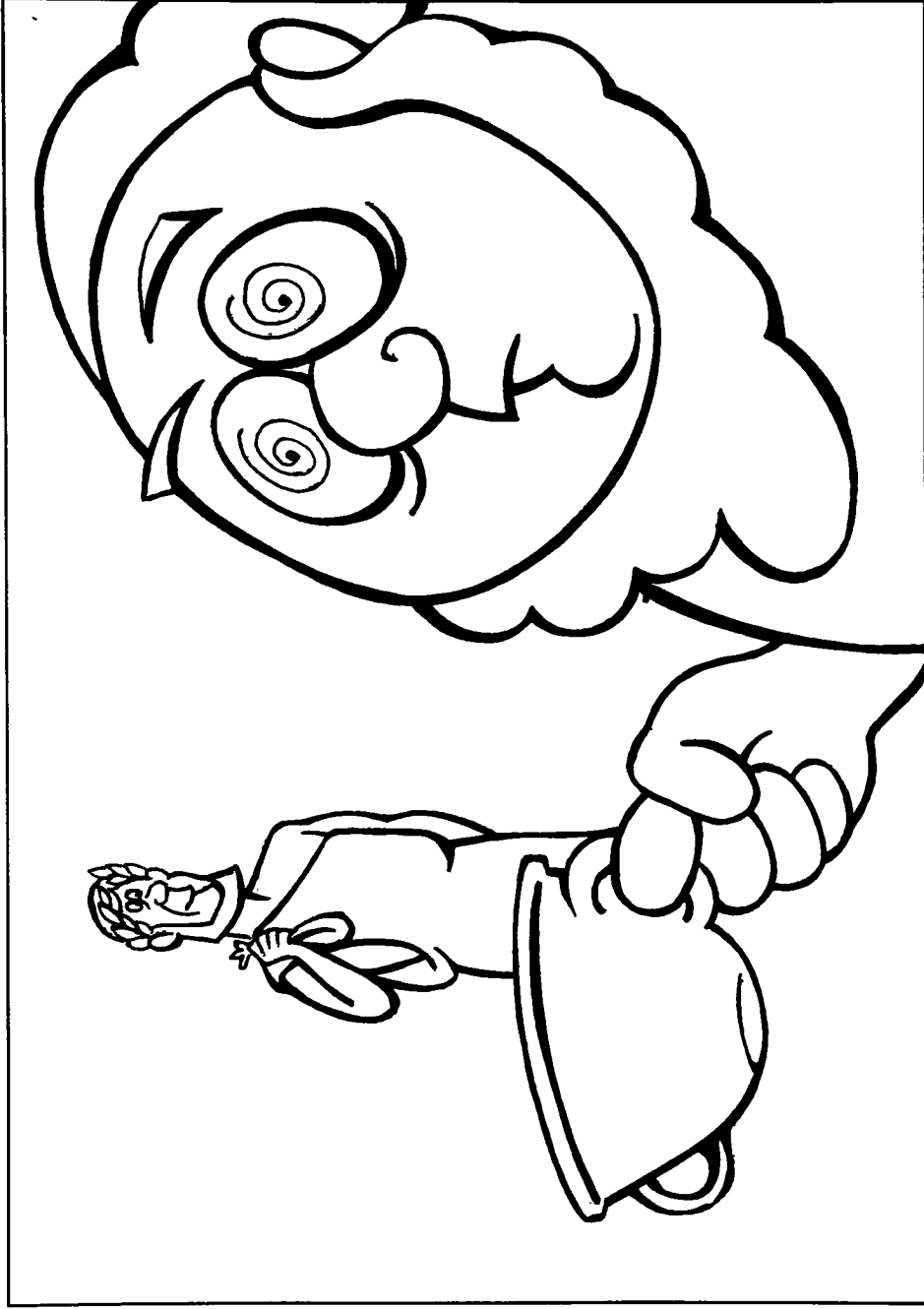
OUT OF CHAOS CAME GAIA, OUR FERTILE MOTHER EARTH.
SHE BORE URANUS CROWNED IN STARS, A WHOLE SKY'S WORTH.



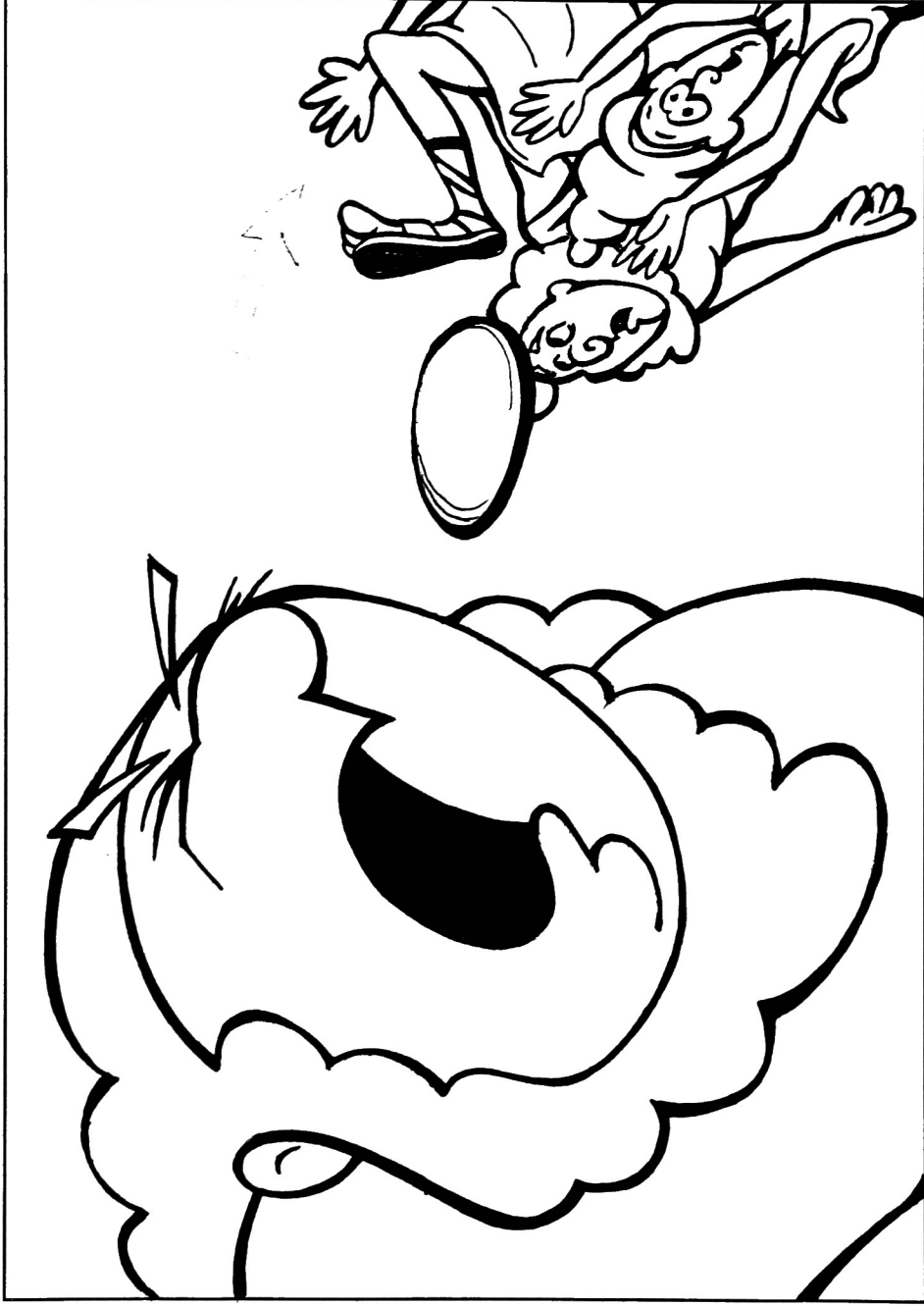
GAEA AND URANUS HAD MANY CHILDREN WHO MADE A LOT OF NOISE.
THE FIRST WERE THE TITANS - SIX GIRLS AND SIX BOYS.



CRONUS BECAME A FATHER OF MANY, FOR WHICH HE HAD NO USE.
HE SWALLOWED HIS CHILDREN WHOLE, EXCEPT FOR ONE NAMED ZEUS.

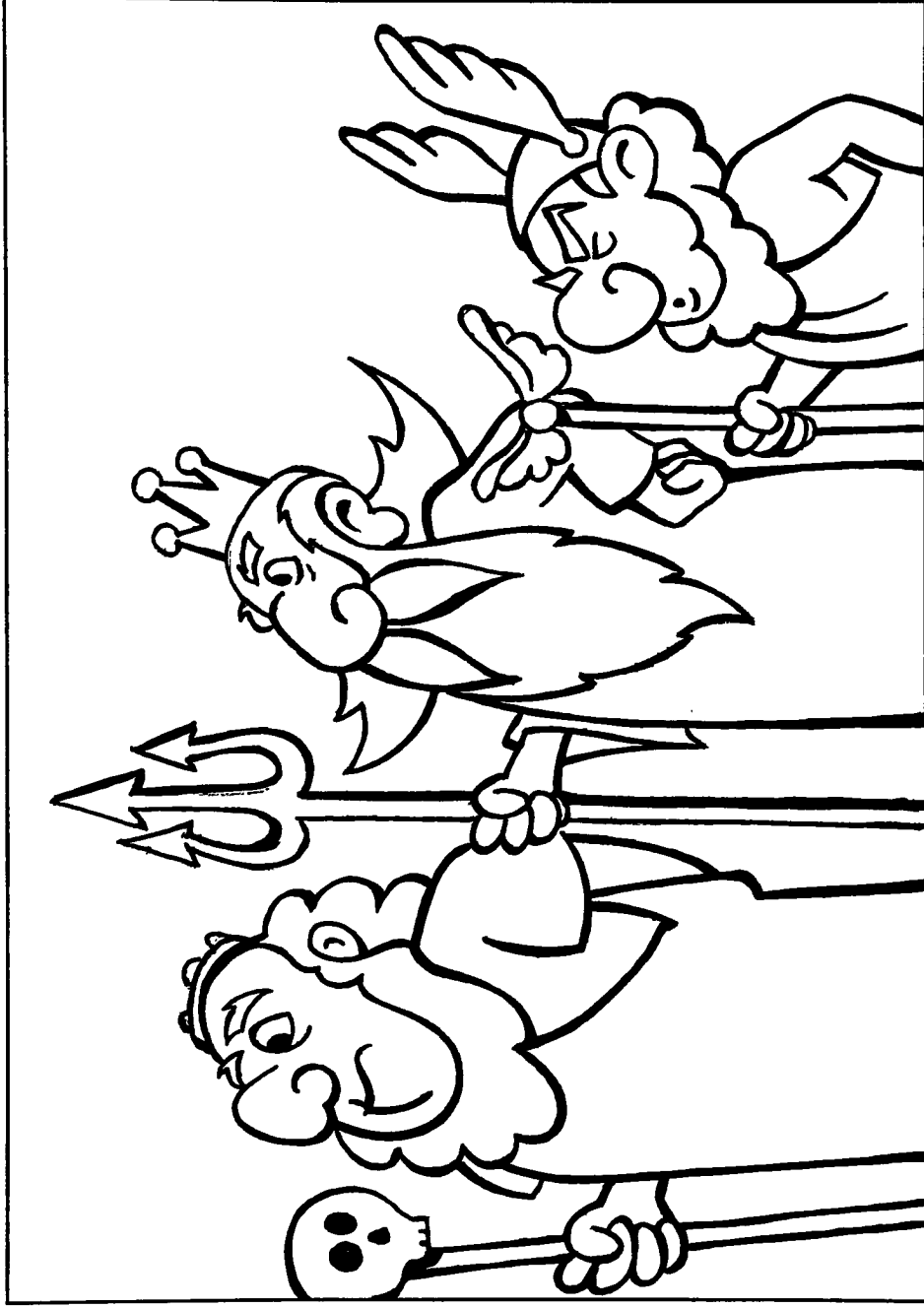


ONCE A MAN, ZEUS SET OUT TO FACE CRONUS AND RESCUE ALL HIS KIN.
HE DRUGGED HIS FATHER'S DRINK CAUSING CRONUS' HEAD TO SPIN.

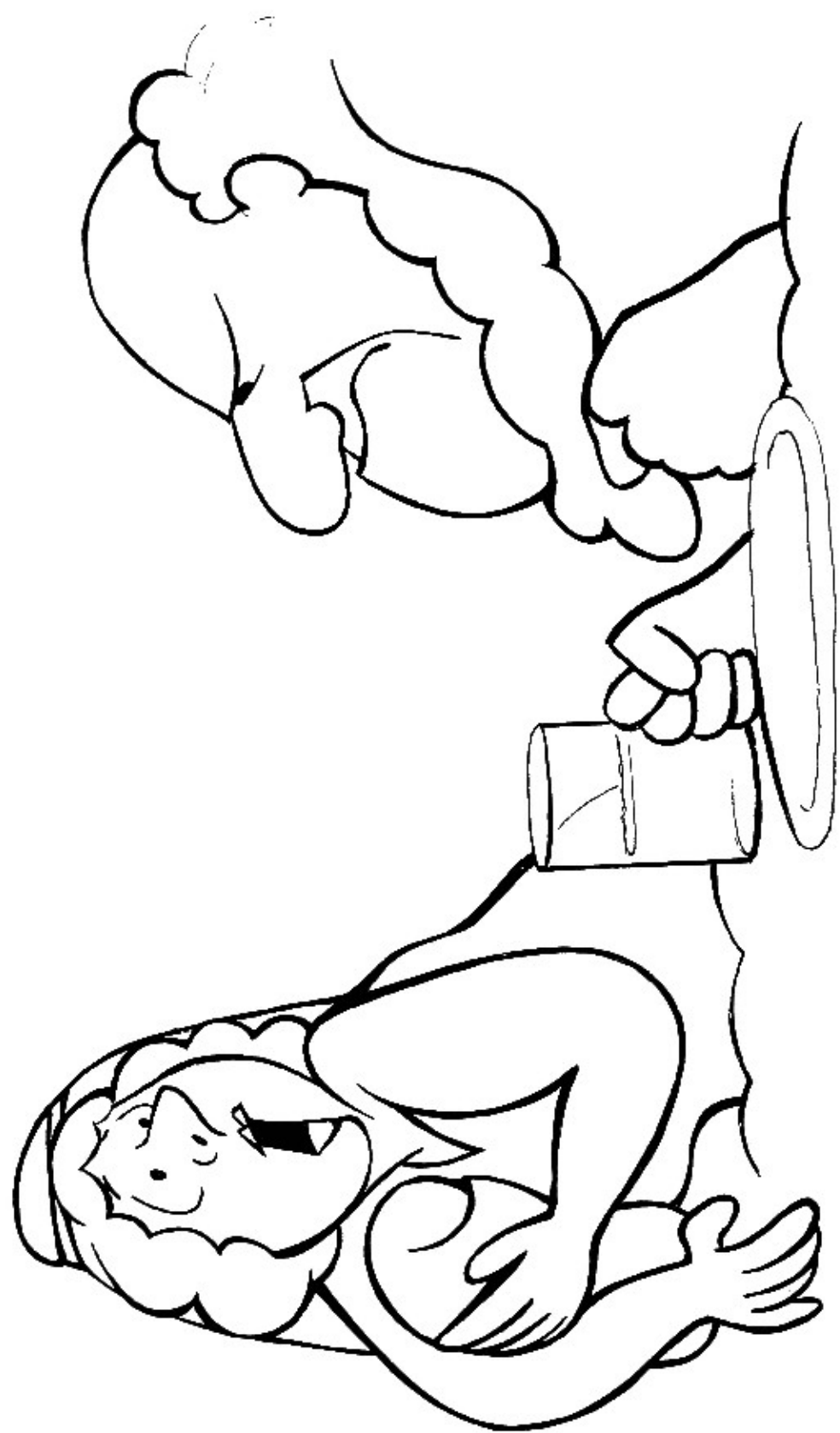


UPON LEARNING A SON WAS STILL ALIVE, CRONUS BEGAN TO GROAN.
HE VOMITED UP ALL HIS CHILDREN INCLUDING THAT STUPID STONE.

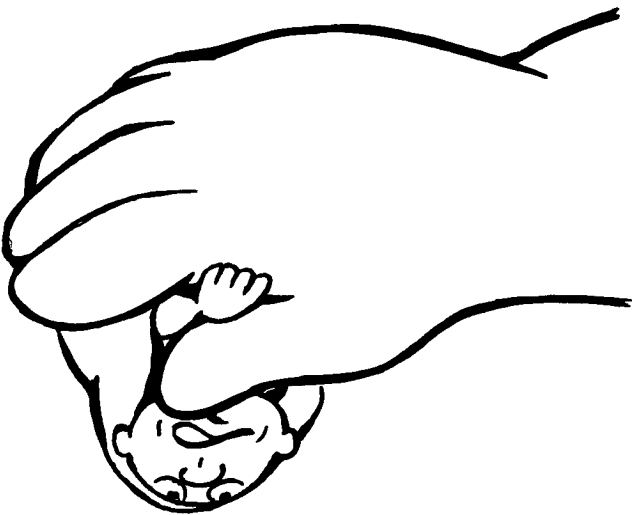
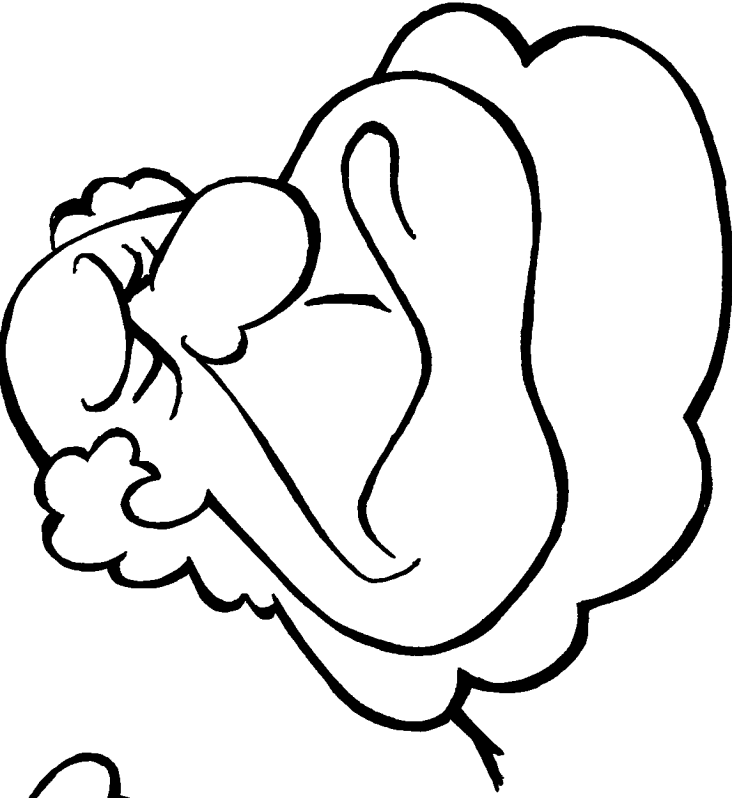
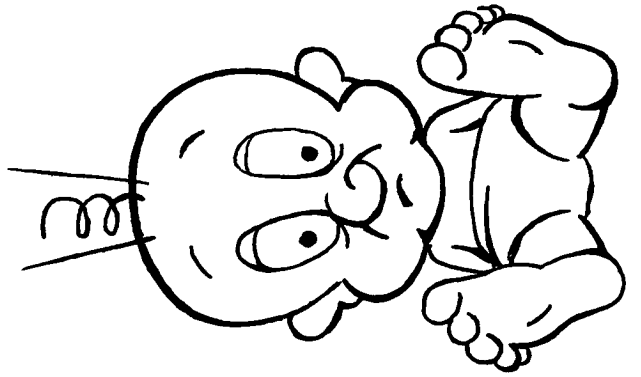
THE FIRST SURVIVORS OF THE TITANIC WERE THE ONLY



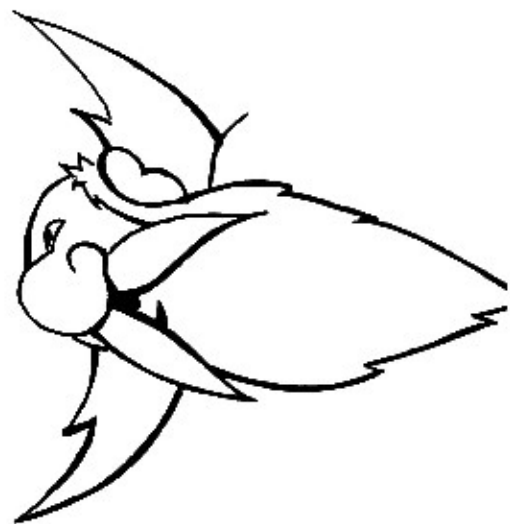
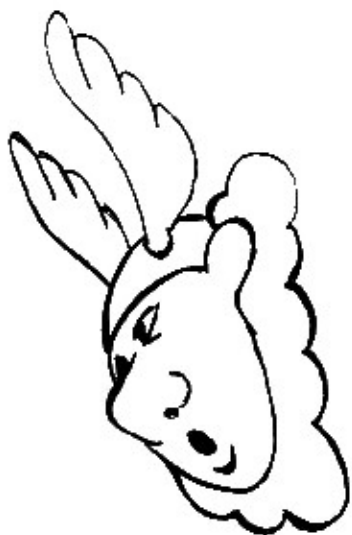
ZEUS AND HIS SIBLINGS BATTLED THE TITANS IN A COSMIC WAR.
MANY YEARS OF THUNDER AND LIGHTNING, EARTHQUAKES AND MORE.

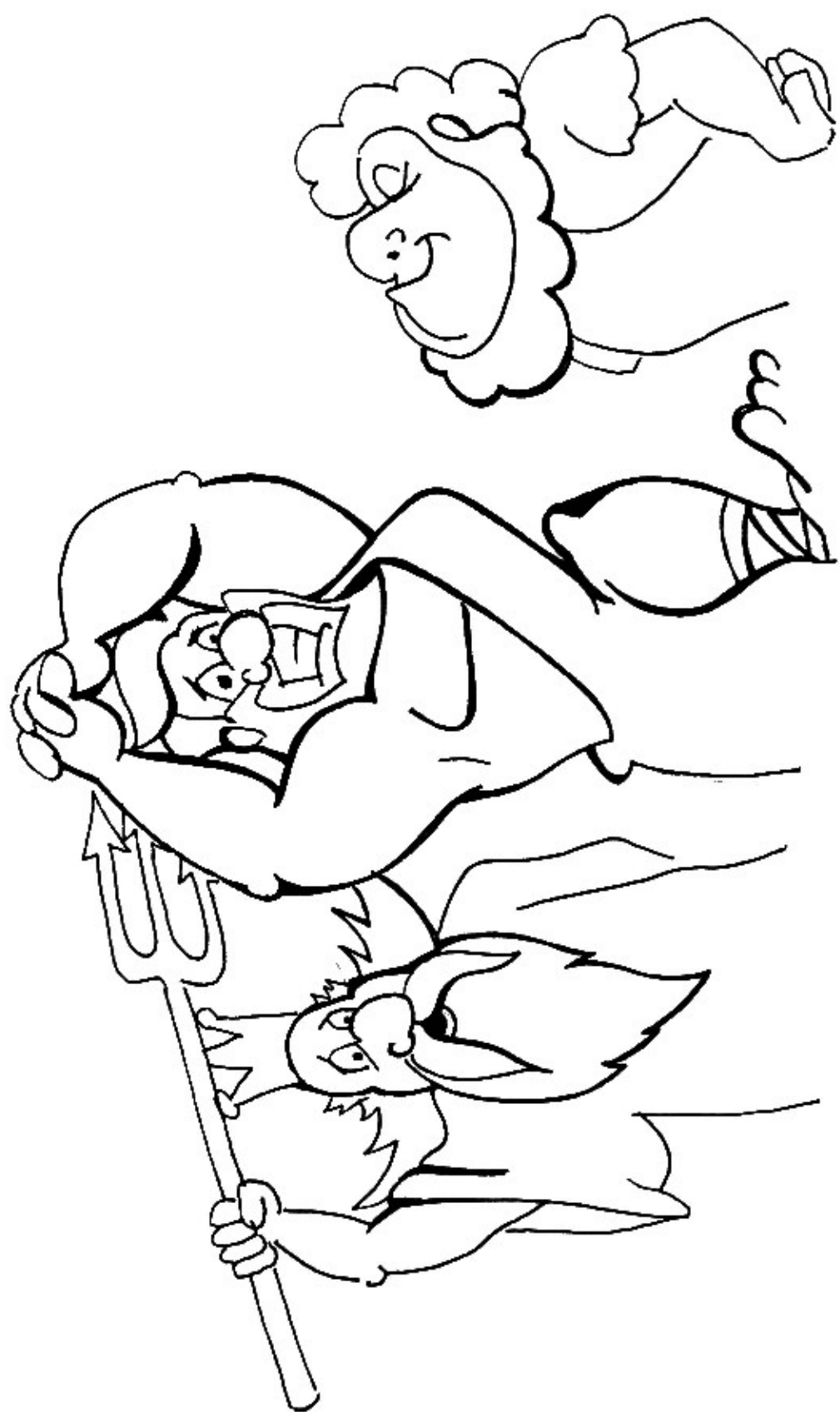


LOUS TOO MUCH,
LIKE LILLY TUD



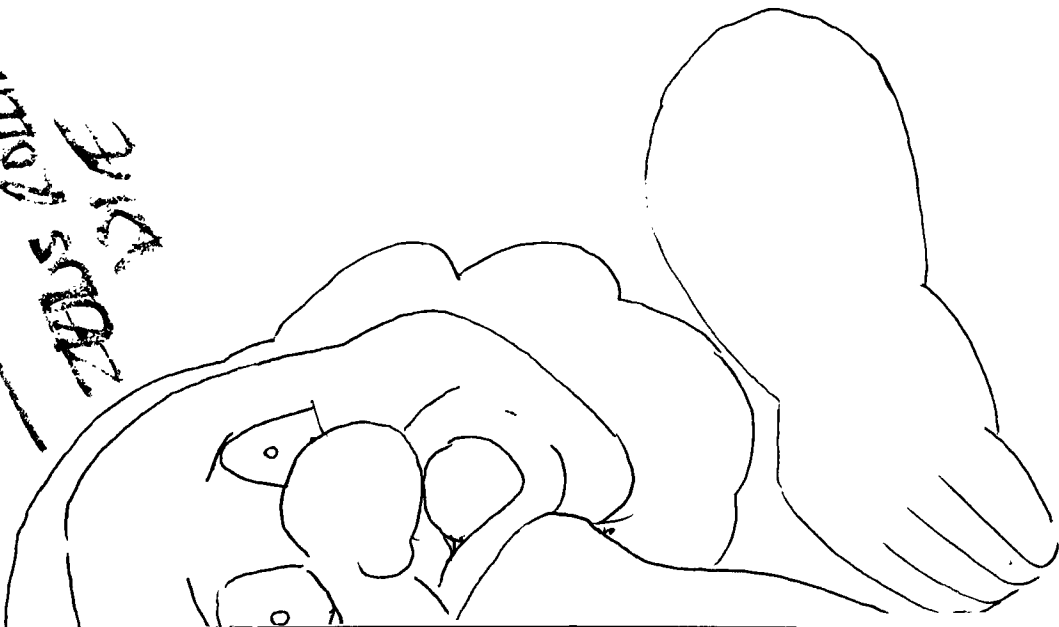


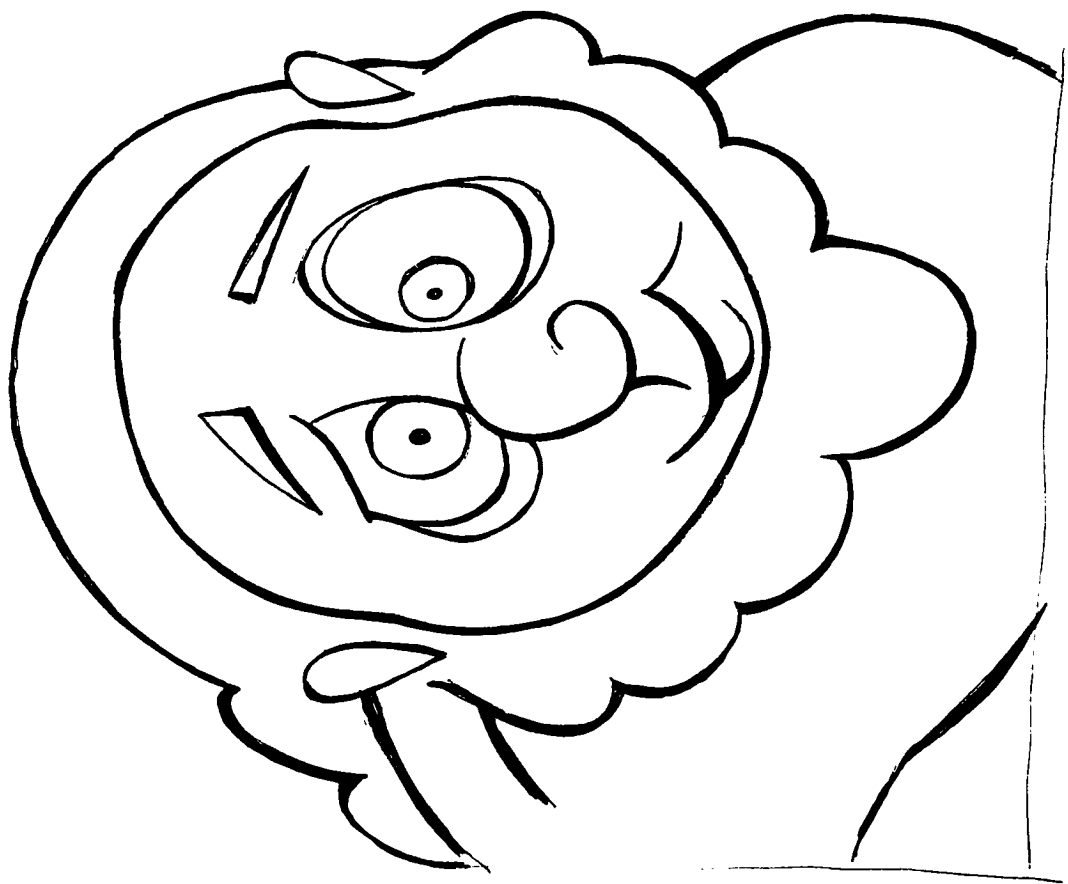




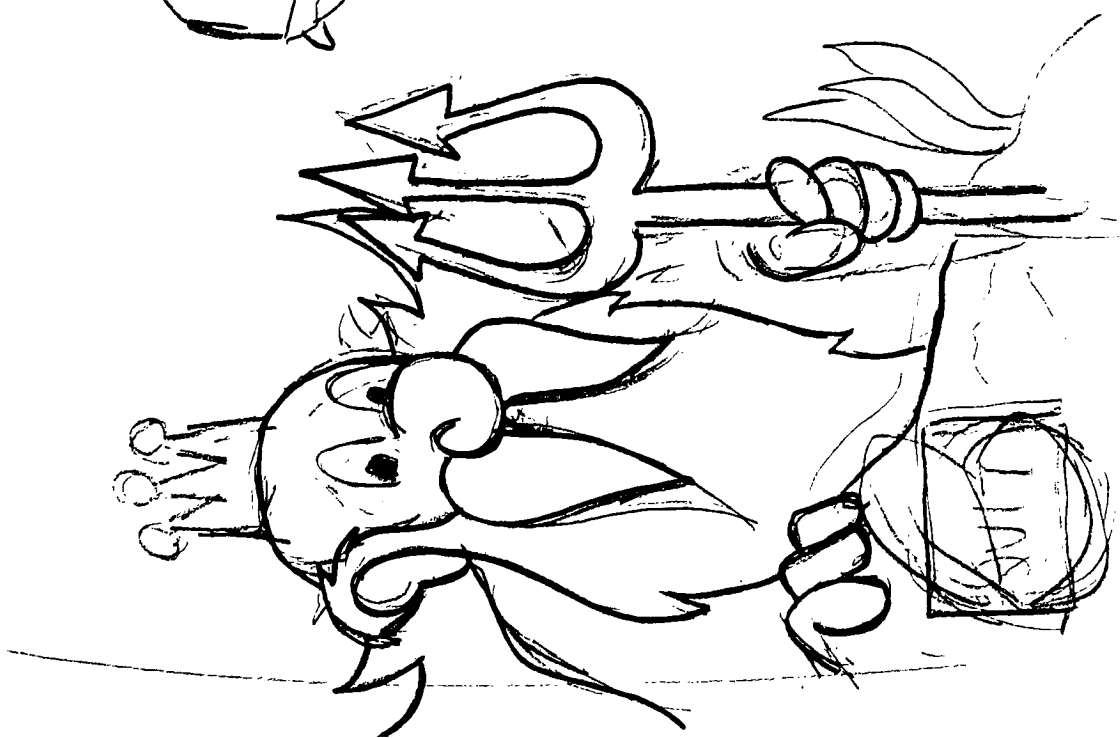
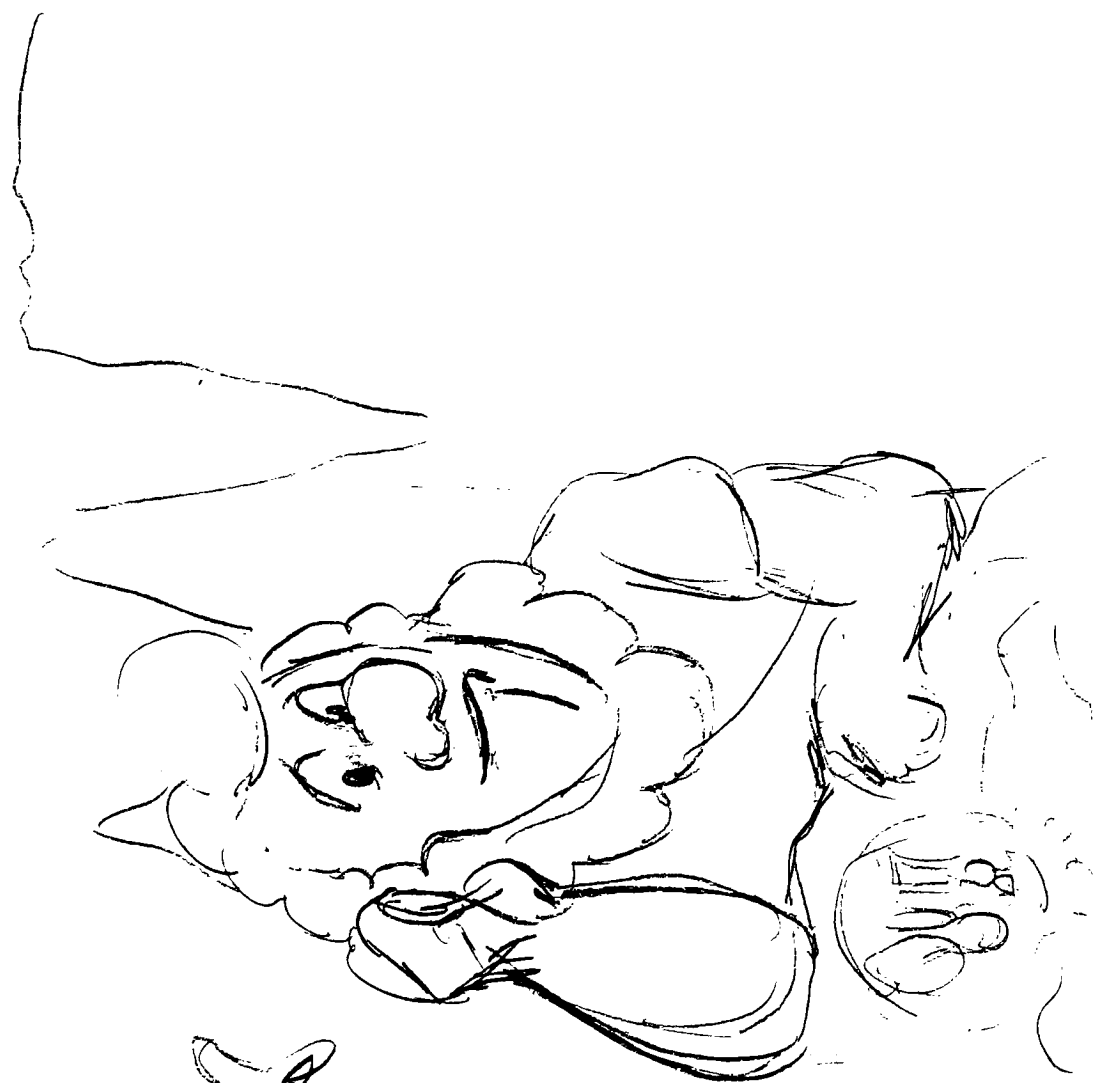


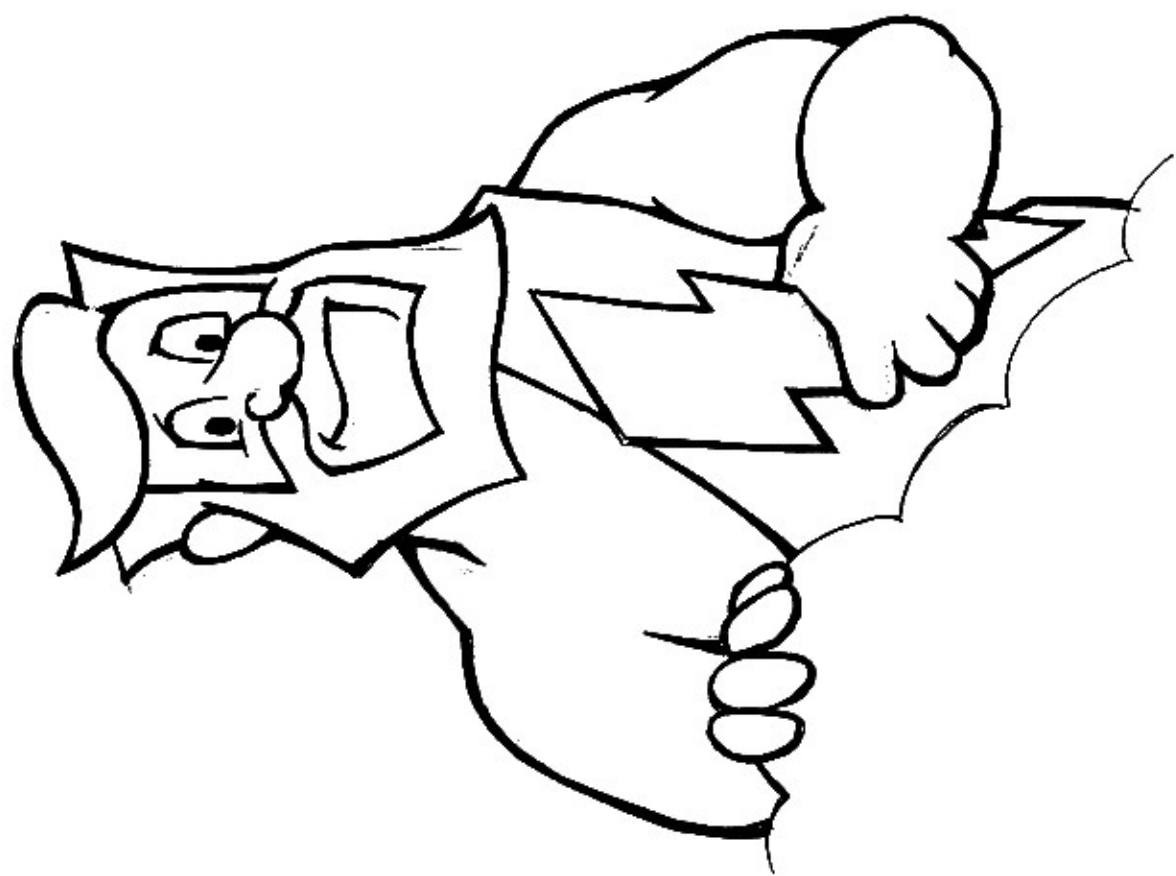
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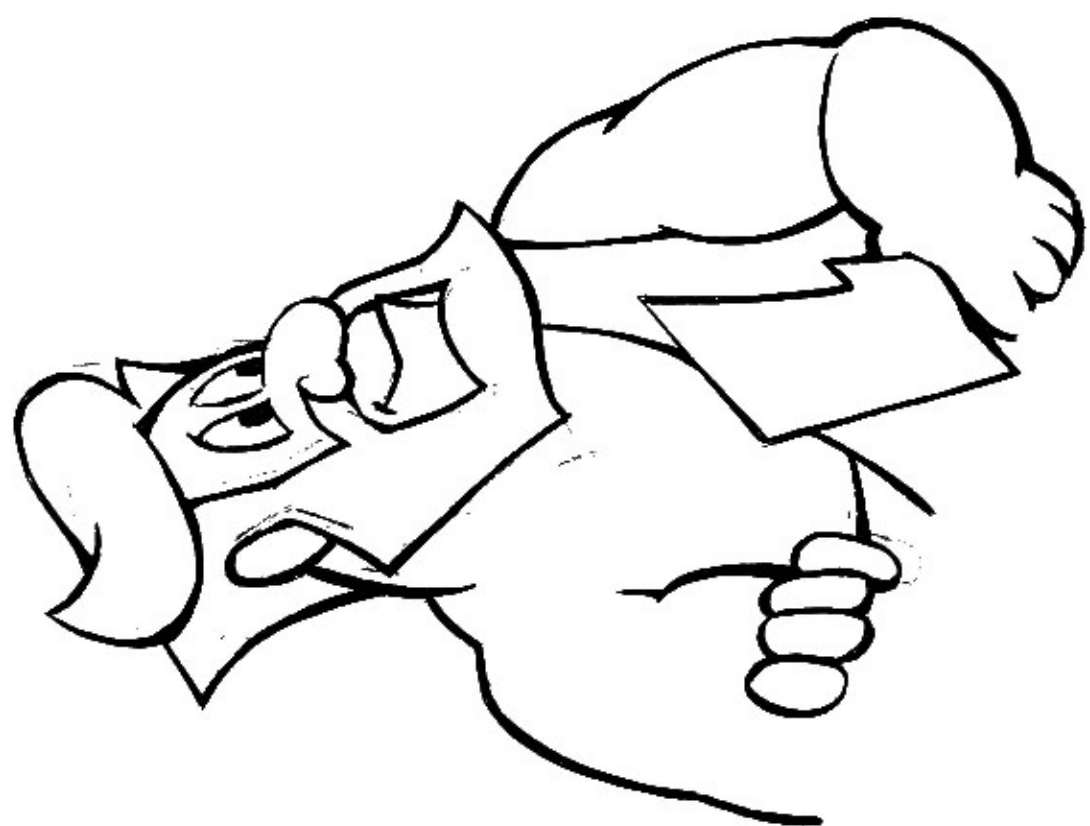






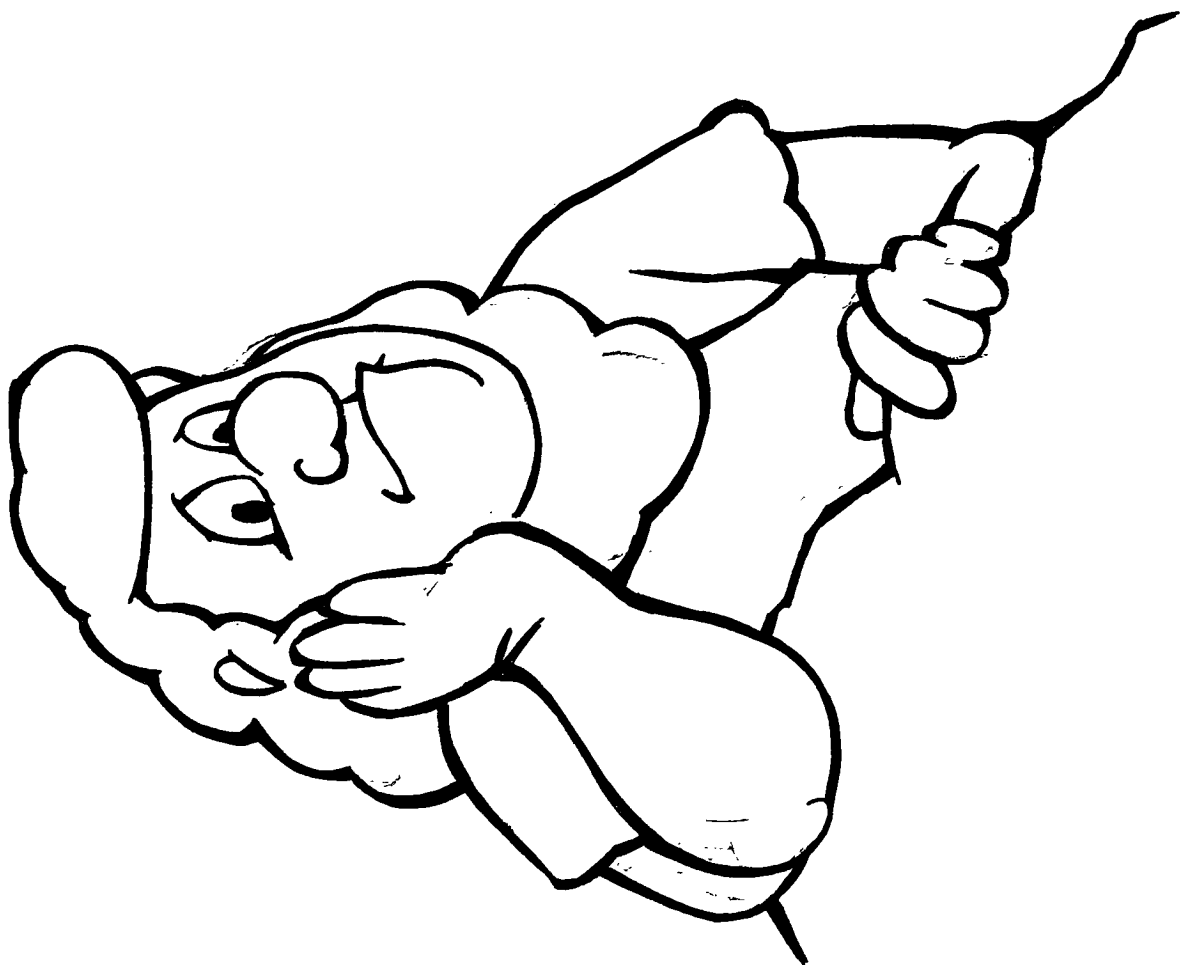


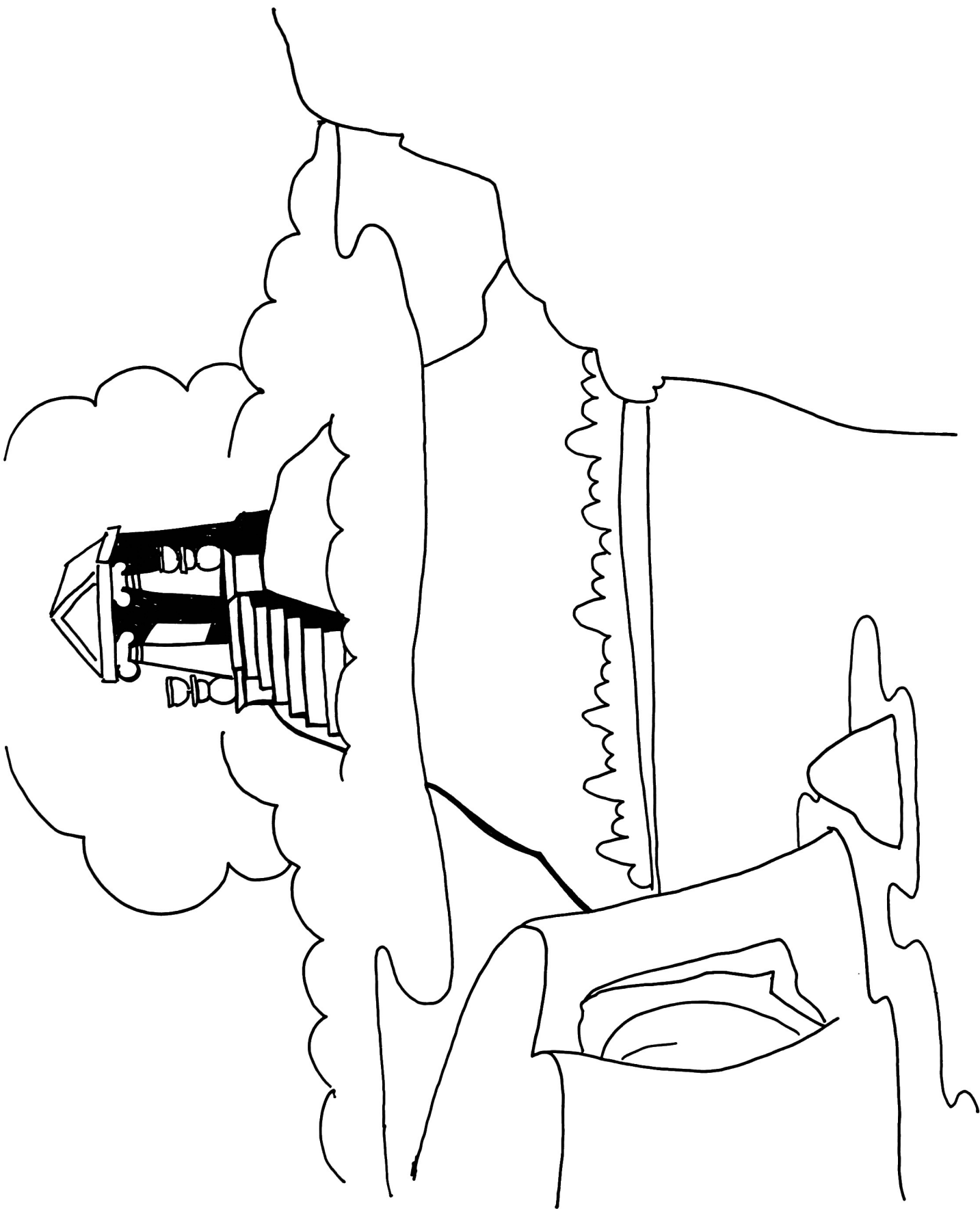


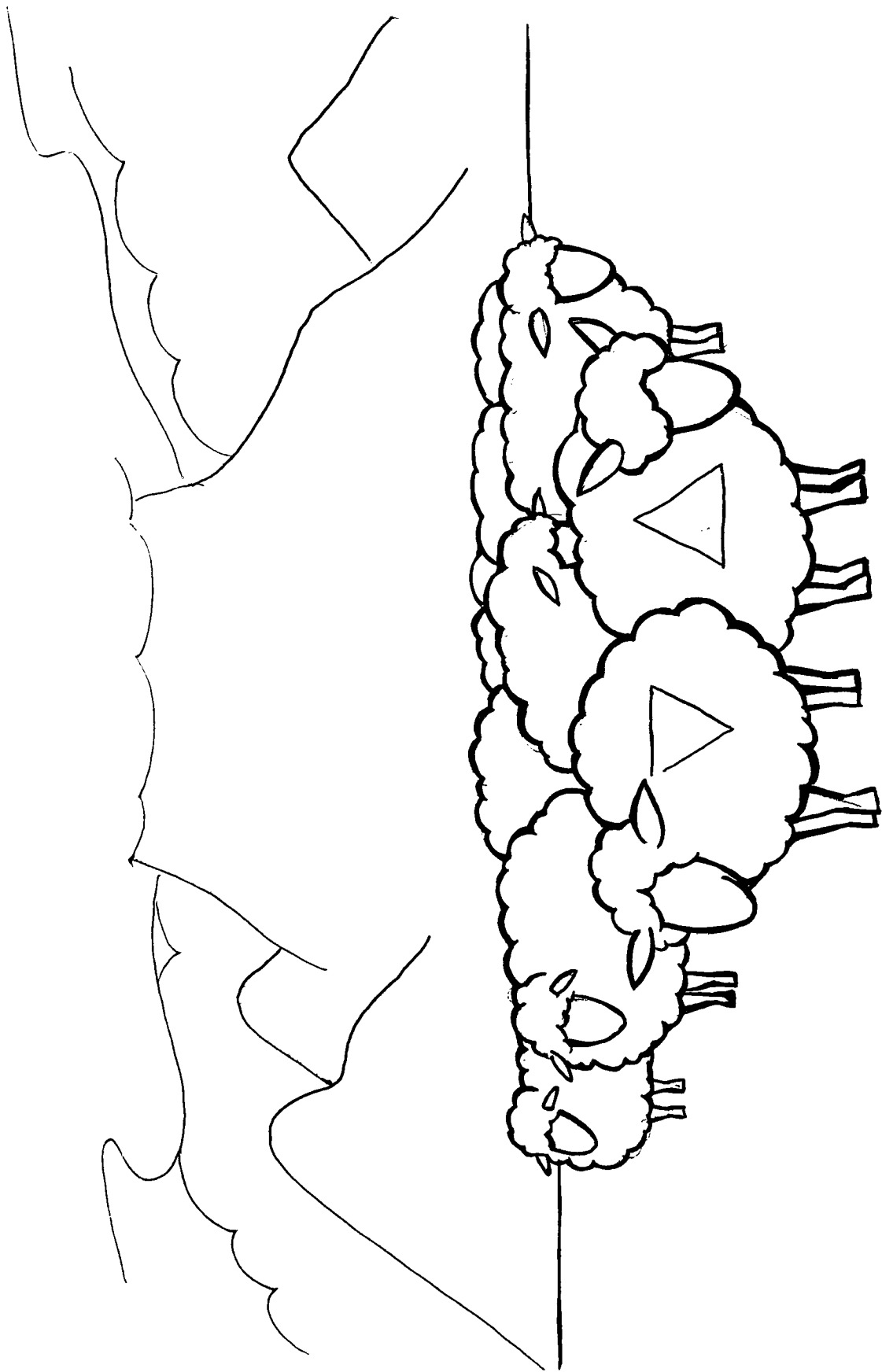




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THE TEXT

INTRODUCTION

PAN: I'm Pan, I tend my sheep and play my pipes for the crowd. If you click on me, you can control the volume – soft or loud.

Let me introduce the other members of the cast. There is Zeus, Poseidon, Hades and Medusa, not least of all just last.

ZEUS: I am the god of Heaven and Earth. My name is Zeus. If you click on me, I have some clouds I would like to introduce.

POSEIDON: I am Poseidon. I am the god of the sea and earthquakes. Click on me and I will tell you about our oceans and lakes.

HADES: I am Hades, I am the god of the underworld. Click on me and I'll show you how rocks were made that volcanoes hurled.

MEDUSA: I'm Medusa. One glance from me could turn men and beasts to stone. Click on me and I'll tell you the story of the Greek gods and how each got their throne.

CREATION MYTH

MEDUSA: I am Medusa, your story guide through this book of Greek gods and where they rule. Don't be afraid of me. I may look scary and evil, but really I think I am pretty cool.

Long ago before the Gods ever came to be, there was only Chaos – total darkness that no one could see.

His child was Night who despite all the odds, made Olympus with Chaos – the sky kingdom of the gods.

Out of Chaos came Gaea, our fertile mother Earth. She bore Uranus crowned with stars, a whole sky's worth.

Gaea and Uranus had many children who made a lot of noise. The first were the Titans, six girls and six boys.

Lead by Cronus, the twelve Titans were giants built quite well. They created our universe where the first men would dwell.

Cronus became the father of many for which he had no use. He swallowed his children whole, except for the one named Zeus.

Zeus was saved by his mother who hid him under lock. The baby in the blanket Cronus swallowed was really a rock.

Once a man, Zeus set out to rescue all of his kin. He drugged his father's drink causing Cronus' head to spin.

Upon learning a son was still alive, Cronus began to groan. He vomited up all of his children including that stupid stone.

Zeus and his siblings battled the Titans in a cosmic war. Ten years of thunder, lightning, earthquakes and more.

With Hades' helmet of darkness, and Poseidon who split the seas. Zeus defeated the Titans and the brothers celebrated victory.

The world was separated so that each brother would have a domain. One by one they rolled dice to see where they would reign.

Hades won the underworld. Poseidon won the seas. And Zeus, the heavenly skies was where he was going to be.

A palace was built on Mount Olympus so they could rule with pride. Zeus was the master of the universe with his brothers at his side.

CREATION MYTH FUN FACTS

CHAOS: Chaos was a vast sea, dark, wasteful and violent. In the whole universe there was nothing else, just black empty and silent.

NIGHT: Olympus was a mysterious region far above any mountain tops. It was the home of the Greek gods, where they feasted, slept and had tales to swap.

URANUS: The Greeks did not believe the gods created the universe, but rather the universe created the gods – just the reverse.

GAEA: People began telling stories, or myths, to explain the mysteries of life. Through their imagination, they believed I was Uranus' mother as well as his wife.

URANUS: I am the sky and I sent the rain down on Mother Earth. Without me, Gaea would not have been able to give birth.

GAEA: I am the Earth, mother of all living things that appeared. I am the mother of the first gods, even the ugly and weird.

CRONUS: I banished my father from the Earth with a sickle. I replaced him as lord of the universe, but I turned out just as fickle.

TITAN ONE: Greek houses were built of adobe and their roofs were tiled. Larger houses of the wealthy had gardens but were similarly styled.

TITAN TWO: Many fine examples of Greek art are preserved today. One is Greek vases with designs painted in black silhouette, over red clay.

TITAN THREE: The Greeks tried to keep the calendar in rhythm with the seasons. The months began with each new moon for the obvious reasons.

CRONUS: Only men in Greece were citizens and could make the laws. We were not expected to help around the house, just because.

WIFE: Greek women had great responsibilities, but had very little freedom at all. We had to cook and clean, care for the kids and be at our husbands beckoned call.

CRONUS: Men in Greece ate their meals while reclining on dining couches. The women were not allowed to recline to eat. That may account for many grouches.

WIFE: Greeks ate a great deal of fish, both fresh and dried. Most food was cooked in olive oil. That means fried.

CRONUS: Wine was a common drink in ancient Greece. They exported it to countries to which they were at peace.

CRONUS: Greeks were the first to separate medicine from magic and religious belief. They treated disease by using diet, surgery and drugs to give relief.

ZEUS: Greeks believed education was important, but usually only boys went to school. They learned reading, writing, music and citizenship as a basic tool.

CRONUS: Bows and arrows were used in war, but these had a limited range. However, the catapult could hurl stones a long distance, even though it did look a little strange.

HADES: Soldiers wore armor of beaten bronze and had a wood and bronze shield. He wore a bronze helmet to cover his head and protect him in the battle field.

POSEIDON: Fighting ships, or galleys, used oars to power the ship sometimes instead of sails. Ships were navigated by experienced seamen and consisted of about 200 males.

ZEUS: Greeks had many celebrations and they put their festivals to good use. The Olympic Games held every four years was part of the great festival of Zeus.

ZEUS: The tunic was both Greek men and women's main dress. They always knew what to wear, and never had to guess.

HADES: We feast on ambrosia and nectar – that is our food and drink. We can speed down to Earth and mingle with mortals in a wink.

POSEIDON: We look and act human in every way. We laugh, love and fight with each other every day.

ZEUS: We are immortal. We live on forever. We are mighty and strong and really pretty clever.

MEDUSA: Thank you for letting me tell you the myth of the Greek gods and how they came to be. Have you tried choosing one of the Gods to find out more about their domain?

SOUND SECTION

SHEEP ONE: To make the volume loud and easy to hear, click on the arrow going up near my rear.

SHEEP TWO: To make the volume lower and softer to hear, click on the arrow going down near my rear.

ZEUS' DOMAIN

ZEUS: Welcome to my domain way up in the sky. Click on one of the clouds and get a weather fact of how and why.

What are clouds made of and what are all the steps it takes? Well, first the sun evaporates water from oceans, rivers and lakes.

As vapor rises and becomes cooler in the air, it changes to tiny droplets of water everywhere.

Each droplet forms around any speck of dust it passes. So clouds are merely millions of these droplets gathered in big masses.

Lightning is a huge electric spark, that lights up the whole sky when it is dark.

Thunder happens when a flash of lightning heats the air. The air expands rapidly making a noise you can hear everywhere.

Thunder and lightning occur at the same time, believe it or not. It is just that lightning reaches our eyes faster than thunder can trot.

POSEIDON'S DOMAIN

POSEIDON: Welcome to my domain in the sea. Click on a bubble and learn a thing from me.

Glaciers cut a deep valley out of the rocks. It pushes boulders ahead of it which forms a dam that locks.

So when the glacier melts, water fills the valley up. And a lake is formed like pouring water from a cup.

Around each continent there is a sloping shelf of land. The water is less than 650 feet deep in this band.

Beyond the shelf, the ocean floor drops away very steep. This is called the Continental Slope where the water runs deep.

There is an undersea mountain range called the Mid-Atlantic Ridge. It runs through the Atlantic ocean without any bridge.

HADES' DOMAIN

HADES: Welcome to my underworld domain. Click on a boulder and see what you will gain.

What's inside the earth and who really cares? The earth is made of rock and has four main layers.

The crust varies from 4 to 25 miles thick. To dig that deep would take more than a shovel and pick.

The mantle is about 1,800 miles thick give or take a mile. Some of the rock is melted and moves slowly for awhile.

The outer core is about 1,380 miles thick below the mantle. It is 9000°F liquid rock that no man could handle.

The inner core is about 780 miles thick and is a solid crop. It is solid because of all the rock's weight on top.

When the Earth's crust is stretched or squeezed, it causes an opening and the opportunity for a volcano is seized.

Magma is melted rock formed inside the Earth as much as 90 mile deep. Pressure slowly builds up until gas and melted rock are forced out in a heap.

When the volcano erupts with a powerful thrust, molten rock, burning gas and ash explode through the crust.

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